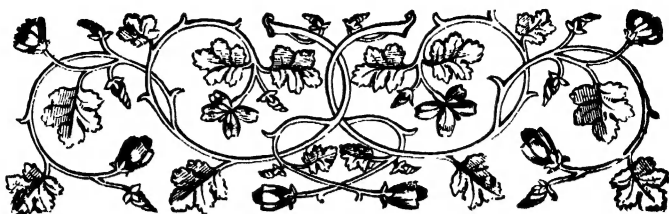


The Elliman R.E.P. Book

(RUBBING EASES PAIN HANDBOOK)

AND

FIRST AID IN ACCIDENTS AND AILMENTS



NOTICE.



THE subjects treated of are indicated by the Summary of the Contents, see pages 8 and 9, also in detail by the Index, pages 242-251.

These may suggest that this book would be likely to be found useful to Parents, Schoolmistresses, Nurses, Travellers, Athletes, Ambulance Men ; in fact to the public generally, and to people living in the Colonies or abroad ; also to Masters of sailing ships, and steamers on which no doctor is carried ; and reading the book will confirm that first idea, because this will prove that general First Aid information (surgical and medical) is liberally provided, and that an endeavour has been made to make the text intelligible by means of diagrams.

The instructions respecting serious troubles are to be read as First Aid Treatment pending the arrival of the doctor, and where such instructions go beyond First Aid Treatment, it is to be understood that such instructions are only to be followed where circumstances prevent medical aid being promptly secured, as for instance in remote parts of the world.

For the advantage of persons travelling abroad, who may require the prescriptions in this book " put up " in foreign parts, the equivalents of the English weight or measure are given in the Metric system.

Contents, *Summary of*, pages 8 and 9.
Index, pages 242-251.

Acknowledgment.

THE Publishers gratefully acknowledge the kindness of the under-mentioned firms who have permitted them to make use of a number of illustrations taken from their well-known books.

MESSRS. LONGMANS, GREEN & CO., for Figs. 13, 14, 16, 17, 29, 37-39, 42 and 43 from Quain's "Anatomy"; 46 and 47 from Quain's "Medical Dictionary"; and 65 from Gray's "Anatomy."

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THE ST. JOHN AMBULANCE ASSOCIATION, for Figs. 21, 49, 50 and 51, taken from their "First Aid Book."

THE SKELETON.

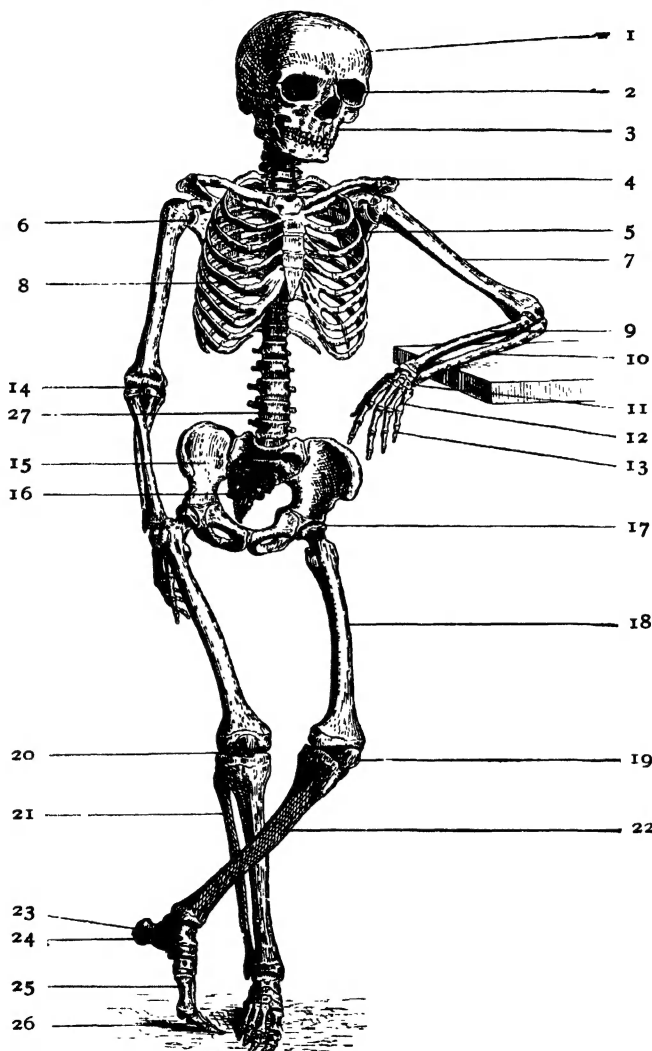


Fig. 1.

1. Skull
2. Orbit
3. Face
4. Clavicle or collar bone
5. Scapula or shoulder blade
6. Shoulder joint
7. Humerus or arm bone
8. Ribs
9. Radius

10. Ulna
11. Carpal or wrist bones
12. Metacarpal or hand bones
13. Phalanges or finger bones
14. Elbow joint
15. The Pelvic bone
16. Sacrum and Coccyx
17. Hip joint
18. Femur or thigh bone

19. Patella or knee cap
20. Knee joint
21. Fibula
22. Tibia
23. Os Calcis or heel bone
24. Astragalus and ankle bones
25. Metatarsal bones
26. Phalanges or toe bones
27. The vertebrae or spine



Field Hospital,
Amery.

Dated - ... 11th March 1913.

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The Index pages 242-251 give full Contents in alphabetical order.

For the advantage of persons travelling abroad, who may require the prescriptions in this book "put up" in foreign parts, the equivalents of the English weight or measure are given in the Metric system.

THE CIRCULATION OF THE BLOOD.

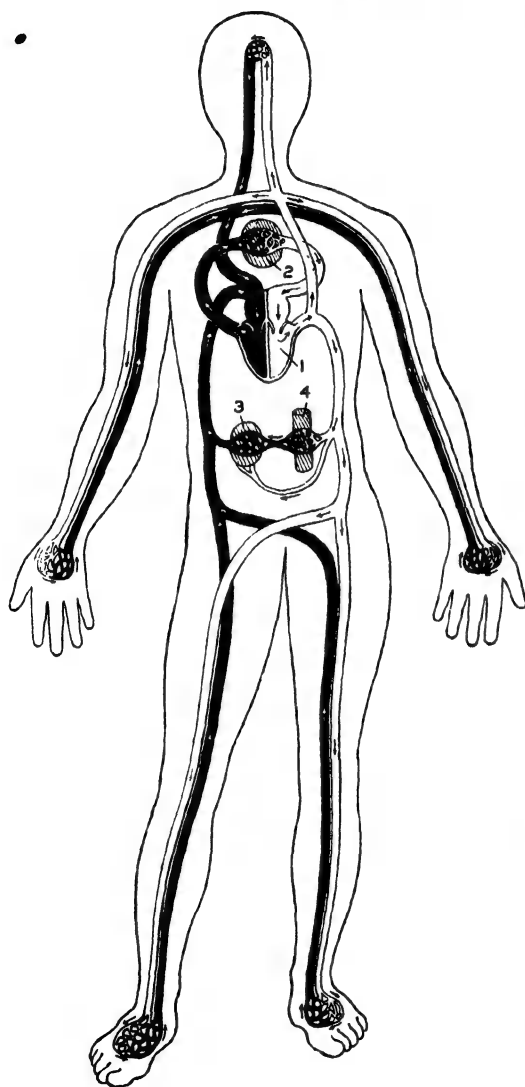


Fig. 2.

THE Arteries are indicated by white lines, the veins by black lines. The arrows show the direction of the circulation or flow of blood.

- (1) The Heart—right side contains impure blood, left side pure blood.
- (2) Represents the Lungs where the blood is purified and changes its colour from *blue* to *red*.
- (3) The Liver.
- (4) The Intestines.

The Arteries contain pure blood: this passes through a meshwork called the Capillaries, and is there contaminated by the carbonic acid gas and effete matters of the tissues of the body, and gives up its oxygen and nutritious properties. It is then conveyed back by the Veins to the right side of the Heart. By the right side of the Heart it is pumped through the Lungs where it takes up fresh oxygen and gives up the carbonic acid gas it derived in the capillaries. Then it is conveyed back to the left side of the Heart, by which it is pumped into the Aorta, and thence conveyed all over the body by the various Arterial branches of the Aorta.

In the Liver, Kidneys, and other organs various processes, resulting in the purification of the blood and body take place, and, on the other hand, these same organs pour into the blood their useless, and often dangerous, products of activity, to be removed from the body through the skin, lungs, *fæces* and urine.

The Lymph Circulation.—Running with the Veins and conveying their

contents in the same direction are small tubes, called the Lymphatics; these take up the fluids which the Veins neglect, and which are especially thrown out in large quantities in an inflamed area.

MASSAGE.

In cases where marked counter irritation is not desired, but continuance of massage is necessary, this may be effected by adding one or two teaspoonfuls of Olive Oil to the bottle of Embrocation, and vigorously shaking the contents before using. A better plan, however, is to smear a small quantity of the oil on the hand occasionally, and not to add oil to the Embrocation itself, because for other uses the Embrocation would be less efficient with oil added.

MASSAGE is an art which depends upon a knowledge of anatomy for its scientific application. But some massage is better than none, and good results can be obtained by carefully following the instructions now given.

The process of massage combines various "movements," as they are called. These are utilised singly or in combination. In most cases any but gentle force is unnecessary.

DO NOT HANDLE THE PATIENT WITH COLD HANDS.

As explained in the article upon Elliman's and its uses (pages 23-28), Elliman's forms a most efficient lubricant.

For massage purposes use small quantities of Elliman's in the various manipulations.

The movements may be called—

1. Stroking.
2. Kneading.
3. Friction.
4. Tapping.
5. Vibration.

The usual method of applying Elliman's consists in vigorously rubbing in the embrocation. This is quite sufficient if the object

is to produce redness of the skin, *i.e.*, if it is to act as a rubefacient or slight vesicant alone, but it is the mechanical factor in its use *which we are now discussing*. Most people rub up and down with equal pressure. This is incorrect. Massage rubbing is a mixed stroking and kneading movement.

Let it be at once understood that all rubbing, stroking, or

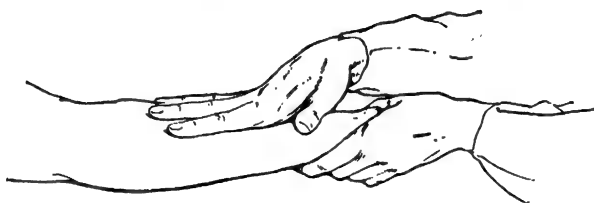


Fig. 3.

Firm stroking with the fingers between the muscles of the fore-arm to stimulate the circulation and break up the effusions after inflammation.

other movements should always be directed *upwards* on the limbs, *downwards* on the head and neck, because this is the direction in which the venous blood and lymph flow (*see Circulation Diagram, page 11*), and in all conditions calling for massage, these two

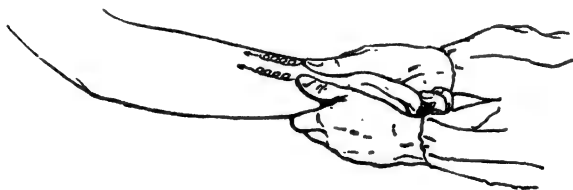


Fig. 4.

Spiral stroking used to soothe irritable parts; or to commence breaking up effusions soon after the subsidence of an inflammation.

streams need stimulating and helping. Stroking or rubbing in the wrong direction retards rather than helps the current in its flow

Stroking is the movement by which all massage begins, and is called for especially in the course of acute inflammations or painful conditions of the skin and nerves.

It may be performed with varying degrees of force, and if the part is exquisitely tender very gentle stroking with the palms of the fingers only can be borne. When the pain has subsided firmer stroking can be performed, and the palm of the hand used, either flat as in rubbing, or by grasping the limb between the fingers and thumb. If the limb or part be large, the palm of one hand may be placed on one side, and the other palm on the opposite side and both pushed towards the trunk, either together or alternately, if the latter, one palm must begin its strokes just as the other ends.

In cases of headache, spinal irritability, or neuralgia the stroking is done in a different manner, namely, by a sort of spiral movement with practically no pressure (diagram 4). Except for acutely painful inflamed parts, and to soothe nerves or allay irritability, stroking is done briskly with as much force as can conveniently be borne.

Kneading is the most useful of all movements for dispersing chronic inflammations, and reducing thickening consequent upon such.

After paralysis or wasting of muscles from long continued disuse, or to *prevent* wasting from such causes, kneading is invaluable. It softens and makes supple a part, just as kneading and working putty softens it.

As the name aptly indicates the tissues are thoroughly manipulated. The only precautions are to avoid using so much force as to bruise the delicate tissues, and always to do the kneading from below upwards.

It is done in various ways—

1. A piece of muscle may be picked up between the index finger and thumb and rolled between them five or six times, then the piece immediately above is taken and the process repeated, until the whole muscle is treated.
2. If the muscle be large it may be grasped between the fingers and the thumb, and the latter used to well knead, roll, and squeeze it against the fingers (diagram 5).

3. Or the whole limb may be grasped with the thumbs in front and fingers behind, and the tissues *squeezed* against the bones, then relaxed and squeezed again (diagram 6).

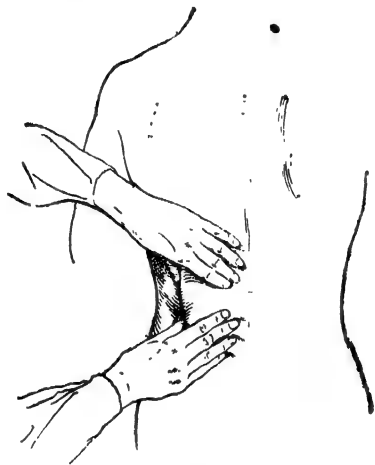


Fig. 5.
Kneading applied to broad fleshy parts.

The whole limb from ankle to knee, say, being gone over carefully from below upwards.

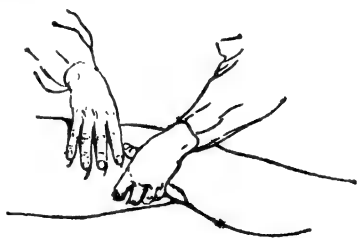


Fig. 6.
Kneading by firmly grasping the limb between fingers and thumb, squeezing and partly wringing the tissues.

The squeezing is done just as a wet sponge is squeezed, and the result is very analogous.

The veins and lymphatics are thoroughly emptied of their stagnant contents by the pressure, and so a new supply is encouraged ; thus the vitality of the part is increased.

4. Again the limb may be grasped between the thumbs in front and the fingers behind, but with one hand *higher* than the other, now squeeze firmly, then roll

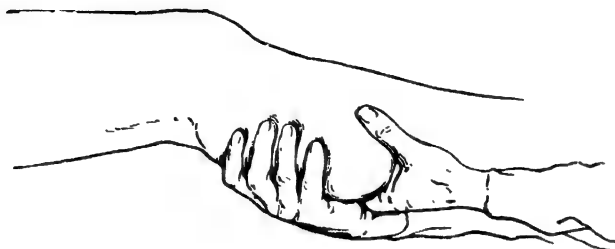


Fig. 7.
To illustrate "wringing" the calf muscles.

the muscles with the hands as if "wringing them (diagram 7).

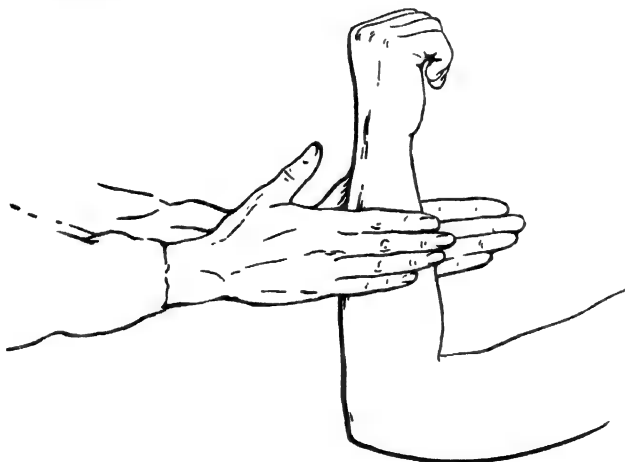


Fig. 8.
Fulling.

5. The last method used is that called "Fulling," which consists in rolling the limb between one's palms as one "twiddles" a stick or warms one's hands when cold (diagram 8).

Friction is most useful in the treatment of chronic effusions into joints, and after sprains, where it corresponds to ~~and~~, replaces kneading of muscles. It is really a deep firm stroking movement best performed with the tips of the fingers or with the thumbs. It helps to produce absorption of inflammatory products by breaking up the coagulated materials, and then driving them into the lymphatics; also by stimulating the circulation it helps in the process of repair.



Fig. 9.

Method of applying deep friction with the finger tips between the muscles.

About Joints.—It is done in two ways—

1. With the tips of the fingers of one hand, held almost vertically, rub firmly *upwards* over a limited area, and with the tips of the fingers of the other hand rub the *same area* transversely, really performing small circles or ellipses alternately.
2. The second way is to grasp the joint between the fingers and the thumb, and without moving the thumb on the skin roll it about in the form of a circle. In this way the tissues underneath the skin are rubbed against one another, *i.e.*, “kneaded.” Having rolled the thumb for five or six circles move on to a new (adjacent) spot and repeat.

Both these movements are done with force and briskness.

Friction is aided by thoroughly squeezing the swollen joints between the two hands for a few seconds four or five times in the following manner—

The palm of one hand is placed flat on the limb just above the upper limit of the swelling, and the other below, then without sliding them over the skin the two hands are pressed firmly towards one another compressing the fluid present (diagram 10).

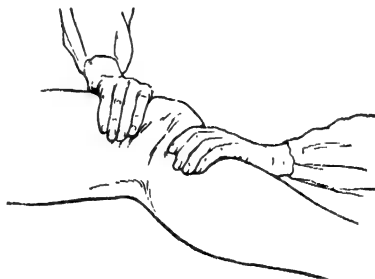


Fig. 10.

Compressing joints to encourage absorption of fluid in synovitis and after sprains.

Tapping is done either with—

1. The tips of the fingers.
2. The palm of the fingers (diagram 11).
3. The palm of the hand either straight or half closed so as to contain a cushion of air.

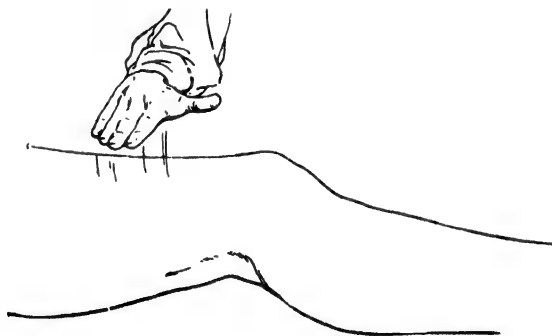


Fig. 11.

Tapping with the palm of the fingers.

4. The back of the half closed hand.
5. The inner or outer border of the hand or the knuckles.

The special use is to stimulate weak muscles after paralysis or after fatigue.

The action should be entirely from the wrist—pianoforte action—and the taps should be always very rapid and of different degrees of force as may be necessary. Finally a rapid number of light flicks or “slaps” are given to the part. In some cases such as the abdomen a kind of vigorous push with the knuckles is best.

Vibration requires considerable ability and knowledge, as its purport is to pick out the nerves and stimulate them. This is done in one of two ways, either by rapidly drawing the finger tips across the position of the nerve, or by causing it to vibrate with the thumb as in playing a banjo.

INFANTILE PARALYSIS.

The following are directions to mothers respecting the care of children with Infantile Paralysis.

They are applicable for all forms of wasting of muscles, from any cause whatever.

In certain forms of paralysis, in which the muscles become too excitable, and jump or start, causing great pain at the slightest provocation, only the soothing stroking movement should be used (*see fig. 4, page 14*).

The Clothing.—The child must be kept warm day and night. Knitted woollen stockings to come up above the knees. If these do not keep the limbs warm, woollen overalls to be worn outside the stockings. The overalls to come up the thighs. If these are not sufficient to keep the limbs warm, the overalls must be lined with cotton wadding, which is to be quilted so as to hold fast to the overalls. For the night a flannel sack made the shape of the leg, and coming up to the top of the thigh is the best. This sack should be lined with cotton wadding.

Do not handle the child with cold hands.

Rubbing.—Rub for a quarter-of-an-hour twice daily. Set the child on a chair, or lay it in the bed, or let it sit on somebody's knee.

1. Rub the paralysed leg from the foot up to the top of the thigh. Rub upwards only. Put the broad part of your hand on the back of the child's leg. In rubbing the thigh you may put your hand first on the back of the child's thigh, and afterwards on the front of its thigh, but always rub upwards, and be sure to go as high as the child's groin; while rubbing with your right hand, hold the child's foot with your left. Use for rubbing a little of Elliman's. Do not handle the child with cold hands.
2. Take hold of the child's leg with your two hands just above the ankle. Rub round the leg with your two hands in opposite directions as though you were wringing out sheets. Work up the leg and thigh from the foot up to the top of the thigh in the manner described (*see fig. 12a next page*).

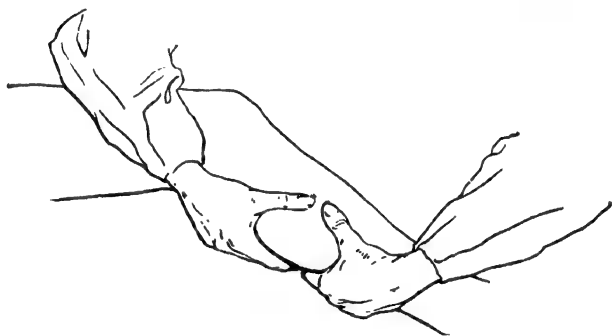


Fig. 12.

One way of compressing the calf muscles.

3. Take the child's calf with your two hands, put your fingers to the back of the leg and your thumbs to the front. Squeeze the soft parts between your fingers and thumb, so as to flatten the leg out and make it as wide as possible. Work right up the leg and thigh in this manner.
4. Put your right hand over the front of the child's

knee, put your left hand against the sole of the child's foot. Push up the child's foot. You want, if possible, by pushing the child's foot, to make the child push against your left hand with all its might. This is the most important of all the exercises.

5. Flip every part of the leg and thigh with your fingers, so as to make the whole of the limb quite red and warm.
6. Gently rub up and down all over, this will take the stinging away which was left by the last movement.



Fig. 12a.
The method of wringing the thigh in an adult.

The Bath.—Once a day let a large jug full of hot water at 100° Fahrenheit containing two handfuls of salt be poured down the leg and thigh. Then pour about half the quantity of cold water over the leg and thigh.

ELLIMAN'S EMBROCATION AND ITS USES.

THE practical value of Elliman's Embrocation in the treatment of all forms of injury and inflammation is too well established to need pressing, but exactly how its beneficial action upon deeply seated inflammation is produced, is still one of the problems of surgery. That Elliman's Embrocation properly applied will allay pain, check inflammation and obviate many of its ill effects, also promote rapid healing is being more and more recognised and acted upon daily.

During health, exercise, *i.e.*, muscular activity is the most potent factor in stimulating the circulation and maintaining the activity of the absorbents of the body, so that if *rest* is absolutely essential, as in the healing of sprains and fractures, the vitality of the part at rest suffers, its blood supply is poorer, the exchange of nourishment and gases is defective and eventually swelling, *i.e.*, oedema and congestion of the part occurs, accompanied by *wasting* of the muscles, and often by partial paralysis.

Massage and rubbing with Elliman's will supply the stimulus lost by the want of muscular activity. Thereby will the muscles be kept in a healthy condition, so that when the patient is permitted the use of his limb again, instead of weak stiff muscles which have to be trained into form, he has available strong supple muscles.

The nerves and blood vessels are also maintained healthy, and the whole machinery of the part fit for almost instant work.

The old routine treatment of sprains, fractures and many joint diseases was to put on a splint and keep the limb fixed for many weeks untouched and without any movement. When the splint was taken off, it was usually found that so much swelling and stiffness was present, it took an equally long or longer

time to make the part supple again, and to undo the mischief done by that mode of treatment ; in many cases permanent stiffness and swelling remained.

The present mode of treatment is, in many instances, to commence massage and rubbing with Elliman's from the very first, and to begin movements early, but in a limited and judicious manner.

ELLIMAN'S AS A RUBEFACIENT.

Elliman's applied to the skin for the treatment of inflammation of various kinds, may simply cause temporary redness when rubbed on the skin, and so act as a rubeфacient. Thus pain is relieved, because the Embrocation tends to prevent or diminish the amount of inflammation in its earliest stage.

When swelling is present the mechanical *rubbing on* of Elliman's drives away the stagnant blood and unhealthy fluids, and brings about a rapid flow of bright and healthy blood, so relieving engorgement, and at the same time bringing abundant nourishment to the tissues which have been injured, to enable them to repair that injury.

Elliman's, in addition, by virtue of certain constituents, possesses the property of directly stimulating the blood vessels of the skin to a healthy action. It thus prevents the formation of abscess.

Its action as a Rubefacient is secured by pouring a little of Elliman's on the palm of the hand, and thoroughly rubbing it into the skin, until it has disappeared, then use a little more Elliman's and repeat, rubbing for five or ten minutes till a sense of warmth and tingling is felt and redness of the skin appears.

The rubbing should be preceded by fomenting with hot water, the part affected.

If followed by a Rash.—Occasionally, especially with delicate skins, a crop of little red points forming a rash, may follow a too vigorous application ; this is an indication that too much vigour has been exercised, or that the Elliman's for that particular skin, is better diluted with equal parts of water.

• **Treat the Rash** by discontinuing the Embrocation for twenty-four hours or more, and cover the part with a little vaseline or zinc ointment spread on linen.

Another method of using Elliman's as a rubefacient, especially when the part is too tender even for the gentlest rubbing, is to wring a piece of flannel out of hot water, sprinkle its surface with a teaspoonful, more or less, of Elliman's, and apply over the affected part. This should be borne as long as possible. Some people cannot bear it for more than ten minutes, others for twenty minutes.

ELLIMAN'S AS A VESICANT.

Going a step further stronger applications called *Vesicants* (Blisters), actually cause a little inflammation in the skin to which they are applied and so produce blisters. These blisters contain fluid abstracted from the sodden tissues, which drain away when the blisters are pricked, and in this way a certain amount of fluid is withdrawn from the inflamed part, thus further aiding in the relief of engorgement and in the promotion of a vigorous flow of healthy blood to and in the part.

Vesicants are used when the inflammation is either very acute or attacks such vital parts that *very urgent* remedies are necessary. On the other hand they are used when the inflammation is very chronic, and the blood vessels and tissues are so unhealthy that they want thoroughly waking up, *i.e.*, stimulating to healthy action, before any improvement can occur.

Ordinary blistering agents, however, labour under the disadvantage that by the tenderness which they produce no further rubbing or active treatment can be adopted for some days.

Elliman's can be made to act as a very efficient mild *vesicant*, by prolonging the time of rubbing and increasing the amount of Embrocation used.

To secure *very severe counter irritation*. First, thoroughly foment the part with hot water, then rub in the embrocation,

follow by using a piece of flannel of the desired size dipped in very hot water, wrung out as dry as possible and sprinkled over with one or two teaspoonfuls of Elliman's, and immediately apply it to the skin. Then cover this with a piece of oil silk, glazed paper, or gutta percha tissue and over all, place another layer of flannel or cotton wool, and retain them in place with a bandage, not too tightly applied.

This *must* be kept on as long as possible, and renewed as often as required. Its effect will naturally vary, in some cases a large blister will be raised, in others a crop of very small blisters.

To treat the blister (*see* page 86).

A combination of *Rubefaction and Vesication* is usually best. Thus a mild blistering followed by systematic rubbing and occasional applications of Elliman's on hot flannels would be most suitable for chronic cases or those which do not readily improve under rubbing alone. If an acutely inflamed part is being treated by fomentations (page 89), each fomentation need not be sprinkled with Elliman's.

Action on Nerves.—Besides the action on the blood vessels and tissues, certain constituents of Elliman's possess the special property of soothing a part when gently applied, by their action on the nerves of sensation in the skin, and indirectly through these nerves good effects are produced upon *deep-seated nerves*, which Elliman's cannot directly reach. Probably in this way, the circulation in a deep part can be stimulated to activity.

Yet while soothing, Elliman's is not poisonous (*see* page 27), even when applied in large quantities and to broken skin. The part on which the skin is broken "absorbs" very rapidly anything applied to it, and if an embrocation containing a poison were used on broken skin, poisoning would result just as if the poison had been swallowed.

Accidents not infrequently happen whereby liniments are swallowed in mistake for medicines, and as a result death has followed such poisonous draughts. Hence an embrocation, which is in other senses efficacious, has an enhanced virtue if it be non-poisonous. Such is Elliman's.

Wounds.—Usually wounds prevent the use of most liniments, on account of the injurious properties of their ingredients, yet the cause of a wound frequently produces conditions about it which *demand the application of counter irritation* to promote the circulation and restore vitality; hence such counter irritants must at least be harmless to wounds, to be harmless they must be antiseptic, and if antiseptic they are directly useful in promoting the cleanliness and healing of the wound itself. Old chronic ulcers on the legs are typical of such wounds, and a thorough application of an antiseptic embrocation, as Elliman's, to and about such ulcers exerts a most remedial effect, causing rapid healing when ordinary treatment has been unsuccessful (*see* page 232).

Elliman's possesses—

1. The properties of being suitable either as a Rubefacient or as a Vesicant, as occasion demands.
2. It is a direct sedative, allaying pain.
3. It mechanically aids "rubbing" by its emollient character.
4. It is non-poisonous if swallowed in error. Proof:

ELLIMAN'S AND THE PANAMIK.

"To one of the Panamik coolies who had sprained his knee, I gave some Elliman's Embrocation in one of our tin teacups, and thought I had made him understand he was to rub it on, but to my horror, and before I could stop him, he swallowed the lotion, and in a very short space of time was sprawling on his stomach, choking and spluttering; but as soon as he recovered his breath, he got up and salaamed, saying it was very good. So, as he seemed quite pleased and none the worse, I did not enlighten him as to his mistake." (Page 13.) Quoted from "The Pamirs," by the Earl of Dunmore, F.R.G.S.

"NOT A PENNY THE WORSE."

"I was called in a great hurry to a family where the mother had administered Elliman's in error for an emulsion to four

children of ages from one and a half to seven years old ; the next morning the victims were not a penny the worse." M.R.C.S., Oct. 28th, 1896.

5. It is antiseptic, therefore harmless if applied to broken skin or wounds.
6. It is a perfect emulsion.

TIME AND FREQUENCY OF RUBBING.

According to the state of the patient the duration and frequency of the rubbing and massage will vary, but ordinarily two or three times a day for 10 minutes is ample. Discretion must be used, and the results carefully observed.

In treating very chronic inflammations, the best result is obtained by twice daily fomenting the part affected with hot water for from 5 to 10 minutes, then thoroughly rub in the Elliman's (*see* Massage, page 13), and in the intervals bandaging the part firmly with an elastic webbing bandage, or a rubber bandage ; notice if the rubber bandage "draws," if so, do not use it. (*See* Martin's Bandage, page 104.)

The small vessels of such an inflamed area are so weak they cannot withstand the pressure of their contents, therefore, after they have been thoroughly emptied of their contents by rubbing, they again dilate and allow continued stagnation of the blood, unless they are braced up by firm bandaging.

Elevation of the part effects the same purpose as bandaging, because gravity aids the return flow when the limb is elevated and so prevents stagnation.

The intense stiffness and soreness of the muscles following exertion, are relieved by the rubbing in of Elliman's.

By the early application of Elliman's as a rubefacient or as a vesicant (page 25) to the skin, an inflammation of the deep tissues and organs of the body may be "aborted" or very much modified, pain relieved, and even life saved.

THE MUSCLES OF THE BODY.

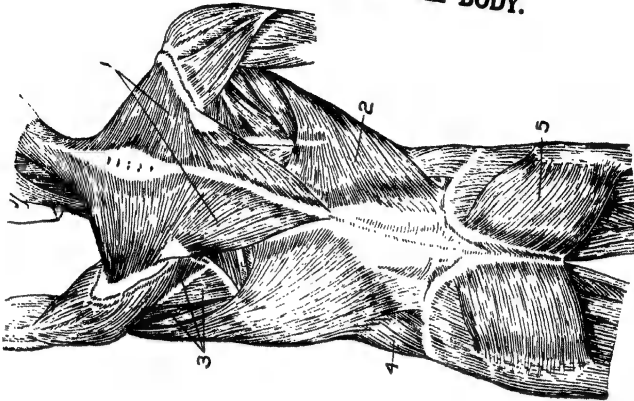


Fig. 14

Front.

1. Sternal-mastoid.
2. Deep Muscles of Neck.
3. Pectoral Muscle.
4. Latissimus Dorsi.
5. Great Serratus.
6. Oblique Muscle.
7. Rectus Muscle in its Sheath.

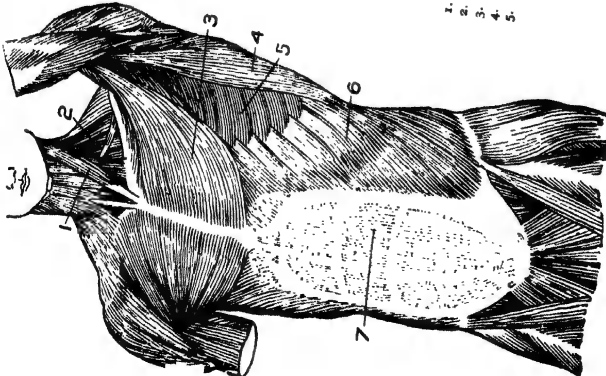


Fig. 13.

Back.

1. Trapezinus or Monk's Cowl.
2. Latissimus Dorsi.
3. Shoulder Blade Muscles.
4. Oblique Muscle.
5. Gluteal or Buttock Muscle.

SPRAINS IN GENERAL.

DEFINITION.

A sprain or strain is the sudden tearing or stretching of the ligaments or portion of ligaments about a joint, or at the attachment of muscles.

WHAT ARE LIGAMENTS?

The human body consists of various tissues, some of which act only as supports to the most vital parts, or as a means of

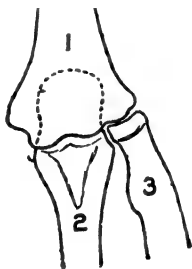


Fig. 15.

SHOWING THE ELBOW JOINT FROM THE FRONT.—The bones only are shown and an idea may be formed of how easily, apparently, the ends can be displaced, *i.e.*, dislocated. Compare next diagram.

1. Humerus or Arm Bone.
2. Ulna.
3. Radius.

binding together the fibres composing a muscle and forming a sheath for it, or for the cells constituting a gland, in a word, one such tissue called *Fibrous Tissue* acts mechanically, filling up interstices, protecting and supporting all delicate structures, entering into the formation of almost every portion of the body, in this humble guise of support and padding. In some parts Fibrous Tissue exists as a delicate gauze-like network, in others bound together in firm dense membranes, or thick cords, in either case the ultimate structure being the same, namely, cells with long

branching processes, interlacing and locking one another into a close network of strands, which cannot be unravelled, but may be torn or stretched.

JOINT CAPSULES.

These dense membranes exist especially about joints, connecting the two bones entering into such a joint, but not binding them so closely as to prevent movement between the two ends,

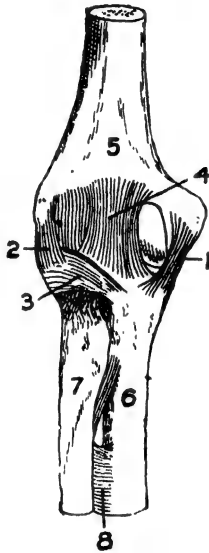


Fig. 16.

Showing the capsule and ligaments of the elbow from the front and illustrating how completely and firmly the ends of the bones are retained by them in their proper positions.

1. Internal Lateral Ligament.
2. External Lateral Ligament.
3. Annular Ligament embracing the head of the Radius (*see* diagram 15).
4. Anterior Ligament.
5. Humerus.
6. Ulna.
7. Radius.
8. Interosseous Ligament.

yet with sufficient firmness to, under ordinary conditions, prevent displacement of the two end surfaces, which, if it occurred, would constitute a dislocation of that joint. Here then about *Joints*

fibrous membranes are called *Capsules*. These capsules are thickened in various directions, or supplemented by fibrous cords, according to the direction of greatest strain, these thickenings or cords are called *Ligaments* and are the real support of the joint.

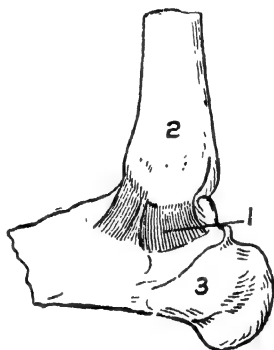


Fig. 17.

Showing ankle from the inner side. In anterior dislocation of the foot the lower end of the Tibia lies on the os calcis in the position of the No. 1. In posterior dislocation it lies in front of its proper position, *i.e.*, on the back of the foot.

- 1. Internal Lateral Ligament.
- 2. Tibia.
- 3. Os Calcis or Heel Bone.

This form of fibrous tissue is not elastic, that is, it cannot like india-rubber be stretched, and when the stretching force is relaxed, return to its original size and shape, it is *inelastic*. This is its virtue, and if overstretched it remains overstretched. Being overstretched in this way its function is interfered with, too much movement is allowed between the joint surfaces and a weakness results rendering the joint unsafe, and therefore dangerous for some considerable period.

After such a stretching, to ensure recovery, which is very slow, considerable time must elapse and suitable treatment in the form of rest and massage with Elliman's must be employed (page 18).

If the stretching force be great, the Ligaments or some of the fibres constituting such ligaments, become torn completely, *i.e.*,

Ruptured, and repair occurs by the formation of new cells, which develop into adult fibrous tissue, bridging across and reuniting the ends of the rupture.

Joints being so liable to sudden strain are therefore the commonest seat of *Sprains*.

The character of the sudden strain or violence which results in sprains is peculiar, inasmuch as it is most usually of a *twisting or wrenching* nature; that such violence is more potent than a straightforward, strong, hard pull in the direction of the fibres constituting a structure is seen in everyday life, and is employed by each and all of us instinctively, inasmuch as when we wish to break anything pliable we twist it.

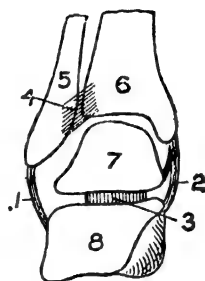


Fig. 18.

Showing the ankle joint from behind, and illustrating how great a part the ligaments play in retaining the bones in position and how twists subject the lateral ligaments to great strain.

1. External Lateral Ligament.
2. Internal Lateral Ligament.
3. Interosseous Ligament.
4. Tibia-fibular Ligament.
5. Fibula.
6. Tibia.
7. Astragalus.
8. Os Calcis or Heel Bone.

SPRAINS ABOUT JOINTS.

One of the commonest examples of such a twist is that where a person suddenly slips from the edge of the pavement on to the outer border of the foot, the whole weight of the body being then borne by the external ligaments of the ankle joint (*see* diagram 18 above), the foot is fixed by the ground while the body and leg tend to rotate violently outwards and backwards and is checked

only by the ligaments of the ankle. The external ligaments are first severely strained and immediately afterwards the internal ligaments. So great, however, is the strength of ligaments that often the bones of the leg first give way, resulting in *Fracture* while the ligaments may remain intact. Immense steady traction in the direction of the ligaments can be borne with ease, but a sudden twist, even when not violent may rupture or stretch them.

SPRAINS OF MUSCLES.

So far we have discussed sprains about joints, but sprains may also occur in muscles. Muscles are formed by the binding together of numerous bundles of muscle fibres, the binding material here as elsewhere, being fibrous tissue.

Each bundle resembles exactly in shape an ordinary sausage, which, as we know, consists of meat enveloped in a thin capsule or membrane, which is twisted at the ends and joins together a long string of sausages, the meat in the sausage represents the true muscle fibres or contractile part, and the envelope represents the fibrous tissue of muscle, and the fibrous tissue in exactly the same way connects adjacent muscle fibres. Numerous such strings are collected together and bound side by side like faggots, by other portions of fibrous tissue, so forming the complete muscle.

At one end of the muscle the connecting *fibrous tissue* becomes collected into one cord which is called a *Tendon* and is practically of the same structure as a Ligament.

In muscles, then, the fibrous tissue may also be ruptured by sudden twists or excessive exertion, probably accompanied by tearing of the muscle fibre. A sprain may be slight or severe, according to the violence used and the strength of the ligaments involved, in nearly all cases some rupture of fibrous tissue occurs, although perhaps not obvious to the naked eye, but whatever the degree, the several principles of treatment are the same.

EFFECTS OF A SPRAIN.

These are immediate and remote.

The immediate results are due to the violence.

The remote effects to *Inflammation* and its consequences, set up by the violence, aided and indeed often entirely due to insufficient or wrong treatment at the time of the accident.

THE IMMEDIATE RESULTS.

Ligaments and all fibrous tissue derive their nourishment directly or indirectly from the blood, by directly we mean to convey that they contain in themselves *blood vessels*.

Likewise, they contain *Nerves* which supply them with sensation. These nerves in the various movements of the joint convey impressions derived from the varying pressure upon their terminals in the ligaments, to the brain, and inform it of the changes in position taking place, thus helping in the process whereby we are enabled to maintain our equilibrium. It is with the former functions that we are concerned, namely, those of ordinary and painful sensation.

If the ligaments of a joint be free from disease, or if they be not unduly stretched, we are unconscious of their existence, that is we feel no pain, but if from any cause they become *inflamed*, then any movement, however slight, will so irritate the terminals of the nerves of pain as to give rise to impulses (*i.e.* messages), which, reaching the brain, make us conscious of such pain and movement. Indeed if the inflammation be severe, pain is felt even when the part is at rest.

In addition, if a severe strain causing much injury be put on the ligament, especially if of a twisting character, the nerve terminals are compressed and irritated to an extreme degree, and pain of great intensity, often of a sickening nature, results. This sudden pain produces a reflex effect upon the heart, and gives rise to faintness or shock. So that *pain* is the first effect, and is due to the violence, but as inflammation is the natural and almost immediate consequence of violence, the continuance of the pain is largely, almost entirely due to inflammation—the remote effect of sprains—so the measure of success in relieving that pain and preventing the other effects of sprain both immediate and remote depends upon success in combating Inflammation.

WHAT THEN IS INFLAMMATION?

Inflammation has been defined as the succession of changes which occur in a *living* tissue when injured, provided the injury is not of such a degree as to at once destroy its vitality and structure.

To explain, it must be clearly understood that the *early changes* of inflammation depend upon the blood and the blood vessels, and lead primarily to an increased flow of blood into the inflamed part, causing acute congestion or engorgement.

The early changes in Inflammation.—Blood-vessels are not rigid tubes, always conveying exactly the same amount of blood to a part of the body, but are distensile and contractile, like rubber tubes, capable of changing their capacity, and therefore their carrying power. Under the influence of certain stimuli or irritants of which *injury* is one, acting through the nerves which regulate the capacity of blood-vessels, a rapid dilatation of the vessels conveying blood *to the injured part occurs*; from small-sized tubes they become large-sized tubes, and so a flood occurs, *i.e.*, engorgement results.

From these engorged vessels the liquid portion (*blood serum*), and then the solid ingredients of the blood called *white corpuscles* escape into the fibrous and adjacent tissues, which increases the swelling that has already occurred, due to the engorgement, and so still further pressure is put upon the injured and irritated nerves of pain.

As a consequence of the increased inflow, the blood-vessels conveying blood *from* the part becoming engorged are unable to efficiently *drain* the part, still further adding to its engorgement. *More blood is brought into the part than can be carried away from it.*

To control and, if possible, check this early stage of inflammation is most essential, as the continued escape of blood serum and other constituents (white corpuscles, etc.) into and about the joint affected makes the part painful and stiff, and interferes considerably with its functions, even occasionally resulting in permanent loss of use, or pain in movement of the joint, through the development of *new* fibrous bands, called *Adhesions*, between

the two surfaces of the joint, inside its capsule, binding them together.

What becomes of the Material exuded from the blood vessels ?

Normally, *i.e.*, in health, a certain amount of blood serum always escapes from the blood vessels into the meshes of fibrous tissue or muscles and glands, or into the large cavities containing the lungs, heart or other organs, conveying to each individual cell *nutriment and gases* necessary for its welfare.

The Lymphatics.—From each individual cell this stream of serum, now called *Lymph*, receives noxious substances, the waste material of the cell, and conveys it by a devious route once more into the blood stream, to be cast out of the body or changed by the lungs and other organs into a harmless substance. The lymph is conveyed away by absorbent vessels called *Lymphatics*, and the process is absolutely essential for the well being of the body.

But in inflammation such an excessive amount of blood serum and other blood constituents is thrown out that these *absorbent lymphatics* are unable to convey them away and, in some cases, these vessels become absolutely blocked by the solid constituents.

Coagulation.—In addition, owing to certain complex processes called *Coagulation*, the exudation may become converted into a delicate stringy meshwork, which cannot possibly be conveyed away by the lymphatics, except very slowly, *until it is broken up by treatment*, one form being by elevation of the part and massage with Elliman's.

It is obvious, therefore, that it is the early control of inflammation, by suitable treatment (page 41) and the rapid absorption of the exudation, best secured by massage, which is to be aimed at.

But first to diagnose, i.e., recognise a Sprain.—This is done by signs and symptoms.

Pain.—The first is sudden, more or less severe tearing *pain*, often of a sickening character, in the region of a joint, immediately following upon a wrench, or severe exertion.

Soon this is succeeded by the typical signs of inflammation,

namely, **Pain of a throbbing nature, Heat, Swelling and Redness.**

The *heat and redness* are due to the increased blood flow through the part, just as a blushing cheek is hot and red. The swelling is partly due to this also, but chiefly to the exudation which takes place about the sprain, and *into* the joint in severe cases.

Loss of Movement.—In addition any movement of the part or placing it in a dependent position increases the pain, so movement is *restricted*, and the part is *tender* if touched.

Fever. Discoloration.—A slight amount of fever is also present. In a day or two some *dusky reddish blue discoloration* of the skin occurs, this is due to one of two causes, first, either at time of the accident some of the blood vessels were torn and the blood escaped and collected in the tissues, forming a localised sudden swelling, then later filtering through, stained the skin. Or, secondly, some of the other solid constituents of the blood (red corpuscles) which *may* exude in the process of inflammation, and which contain *red* pigment, break up and set free their *colouring matter*, which stains the skin.

Repair.—The damage having been done and, as far as possible, its immediate ill effects restricted (pages 40-43), *the process of repair* naturally follows, and this we will now discuss.

None of the materials exuded from the blood vessels *take part in the process of repair*, in fact in this process these materials are absorbed, and their imperfect absorption means retarded and imperfect recovery. Even more, it may result in crippling of the joint. It is in inducing their rapid absorption that *Friction* with Elliman's is so beneficial; while the absorption of these exuded substances is going on, the cells constituting the fibrous tissue of the ligaments, etc., are stimulated to activity by the friction and Elliman's, so that daughter cells are rapidly formed by their division into two, and these again subdividing are eventually converted into fibrous tissue and replace or re-unite that which has been ruptured.

Return of Blood Vessels to a Healthy State.—But this latter process is greatly impeded or hastened according to the

rapidity or slowness of the absorption of the exuded material, which in its turn is *dependent* upon the *blood vessels returning to their normal condition*, and the flow of blood *from* the part being hastened, to relieve the engorgement which is present.

The veins draining the blood from the part have been sluggishly performing their duty ; as a consequence the absorbent lymphatics also become blocked partially or completely, so that none of the exuded material can pass away through them.

What we have to do, therefore, is to *aid* the draining away by the veins, of the engorged blood : and secondly to *stimulate* the absorbents to drain away the exuded material which has escaped from the blood vessels, and now chokes the lymphatics, preventing them from performing their function.

Both these objects are best achieved by suitable kneading, rubbing or massaging the part with Elliman's and by douching.

NERVOUS MECHANISM.

All external applications can only act on *deeply seated parts* through the medium of the nerves found in the skin. These "Cutaneous Nerves" communicate, in certain special centres, with the nerves coming from the injured part. The deep nerves perform the function of regulating the amount of blood going to the part, by causing dilatation or contraction of the vessels supplying it.

In consequence of the injury producing the sprain, these deep nerves are damaged, *i.e.*, *paralysed* and *lose control* over the blood vessels.

The effect of Heat and gentle Friction, especially friction with Elliman's, is to so affect the cutaneous nerves that they, by some subtle influence, restore the deep nerves to their function, which thus regain control over the blood vessels. In this way the acute engorgement is relieved and the veins which drain the part act vigorously, new fresh blood is brought to the part and, circulating briskly in it, replaces the unhealthy blood resulting from engorgement.

The lymphatics are also enabled to absorb the exuded materials rapidly, and the swelling, heat, pain and redness soon disappear, and little or no ill effect results.

Heat also acts beneficially in *another way*, and as friction with Elliman's results in heat, the application of this Embrocation by friction, or by soaking some flannel with the Embrocation, and covering the injured parts with this saturated flannel, may be employed *under certain circumstances*.

Thus heat, then, when applied to the skin as a fomentation or poultice or by rubbing, tends, as the popular saying is, "to draw the inflammation to the surface," this it does by diverting the blood stream from the deep parts into the numerous blood vessels which exist in and under the skin.

Because the effect of heat on vessels which it *can directly act upon*, such as those in the skin, is to cause them to dilate, and so, like opening a sluice, it diverts the current into these dilated superficial vessels, thus diminishing the flow of blood into the inflamed parts, enabling the veins to cope with the amount supplied, and the lymphatics to perform their function of absorption, so relieving engorgement.

At the same time, heat has the power of rendering the tissues more *pliable and soft*, and thus relieves the feeling of bursting and throbbing in an inflamed part. Thus in every way heat is beneficial.

Friction.—As to *Friction*, this acts mechanically, as well as by producing heat. When an inflamed part is rubbed gently with the palm of the hand, lubricated by some Elliman's, in a direction *upwards towards the trunk*, the return of blood from the congested, *i.e.*, engorged part is aided mechanically, blood is pushed along towards the heart, and so the circulation is encouraged.

At the same time the absorbent lymphatics are also mechanically aided, some of the exuded material being pushed along the channels.

The relief of pain felt by a patient gently massaged for five minutes twice a day is astonishing. On the third application a more forcible rubbing may be given, *always upwards, i.e.*, with the

return flow (*see* Massage, page 14 ; also diagram of Circulation, page 11).

In very old, chronic cases, where the exuded material—resulting from a badly treated sprain—has become coagulated into a semi-solid meshwork, this has to be broken up by kneading the part, pinching it between finger and thumb, and rubbing it in a circular manner with the *tips* of the fingers (*see* diagrams, pages 14-18).

Never, however, should any massage or friction be *begun* vigorously, always commence gently, which avoids giving unnecessary pain.

COUNTER-IRRITATION.

In very chronic cases a greater amount of counter-irritation, as it is called, is permitted, even to the extent of slight blistering. This may be brought about with Elliman's, by using a greater quantity of the Embrocation and allowing some of it to remain on the skin unabsorbed when the bandage is applied after the massage.

To secure still further counter-irritation a piece of flannel soaked with the Embrocation may be laid on the part and covered with some oiled silk or rubber tissue, and then a layer of cotton wool, a bandage being applied over all (*see* pages 25 and 26).

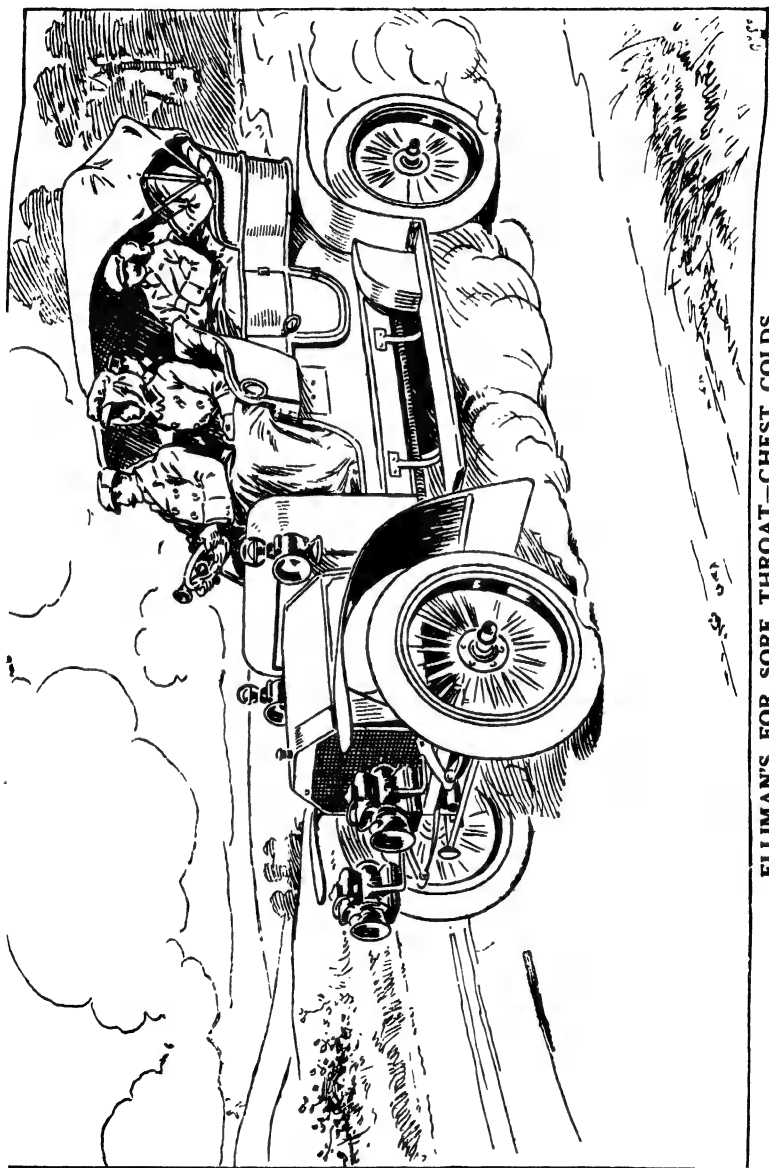
To foment a part, water of the temperature of 130° to 160° Fahrenheit is advisable (*see* page 89).

A rough and ready test of water temperature is to immerse the *elbow* deeply into the water and if the heat can be comfortably borne, the temperature is about right. Should the water employed be too hot, scalding results, producing exquisite pain and preventing further local treatment for some days.

SEVERE SPRAINS.

We are now in a position to discuss the immediate First Treatment of Severe Sprains.

Apply Cold.—As soon as possible apply *cold* to the affected part. This may be done in various ways, one of the oldest and



FILIMAN'S FOR SORE THROAT—CHEST COLDS.

perhaps best is to allow cold water from a tap to run over the joint in a gentle stream, for from five to ten minutes three times a day. (See also Leiter's tube, pages 53 and 54.) Or a bladder or a bag made of flannel, containing medium-sized pieces of ice, may be placed over the part and lightly bound to it.

Bandages (page 44), soaked in ice cold water or various cooling lotions, may be bound round the part hurt.

Useful lotions are made of : Liquid Acetate of Ammonia, one ounce (28 c.c.) ; Methylated Spirit, two ounces (56 c.c.) ; Water, add to one pint (600 c.c.) ; or Acetate of Lead Lotion (Goulard's Lotion), strength, one in 40 ; or Chloride of Ammonium, half-ounce (15 gram.). Water to one pint (600 c.c.) : or Methylated Spirit, Whisky or other Spirit diluted with an equal part of cold or iced water.

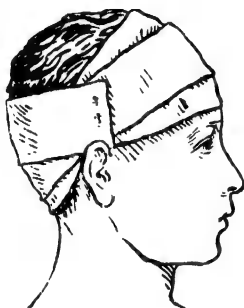


Fig. 19.
A simple head bandage.

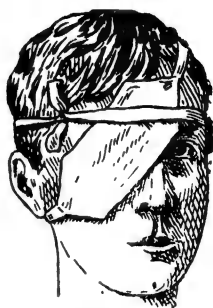


Fig. 20.
A simple eye bandage.

To avoid intermittent cold, cold bandages may be applied as follows. A moist bandage is rolled with uniform tightness about the part, *before any swelling has occurred*, and then kept moist with water, ice or lotions ; or pieces of lint or linen may be soaked in the lotion and applied to the skin, several pieces being used so that when one is on the limb the others are soaking.

The beneficial effect of cold, however, is not of longer duration than 24 or 28 hours.

Bandaging must be carefully done, else harm instead of good results. The bandaging must be begun at the most distant part, and be gradually brought over and beyond the injured area. It

must be done uniformly, the same amount of gentle pressure being maintained with each turn.

The last turn is best fixed by pinning with a safety pin, but the bandage may be slit down the middle of a sufficient length to enable the two ends to be tied round the limb, in which case care

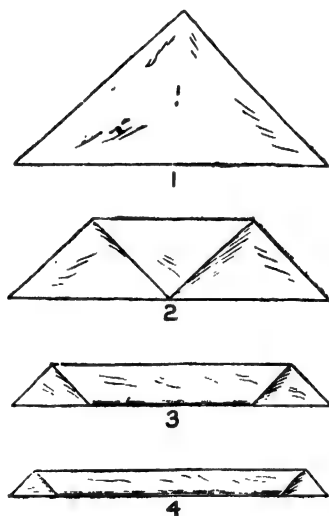


Fig. 21.

- No. 1. Triangular bandage, being half a square of calico, 1 yard to 40 inches in size.
- No. 2. First step in forming a bandage.
- No. 3. Broad bandage.
- No. 4. Narrow bandage.

must be taken not to tie tightly. One such tight turn causes constriction, pressing upon the veins and lymphatics thus impeding the return of blood and lymph, and defeating the end aimed at, which is to aid the return along these channels. This is effected by suitable bandaging.

Cold and firm bandaging, elevation of the part on a pillow covered by a mackintosh or waterproof sheet, and *complete rest* will soon check or cause the inflammation to subside, and we may then go on to aid the recovery or repair of the damaged part.

WARNING.

• Cold, to be effective, must be *applied early*, and it must be applied *constantly*, *i.e.*, it would be injurious rather than beneficial, to simply bathe an inflamed part, say, for ten minutes with a cold solution, and then to put the part in a warm atmosphere,



Fig. 22.
A finger bandage.

such as would occur if the patient retired to bed after such bathing or sat in front of a fire, or even covered it with ordinary clothing.

Why? This is due to the fact that when cold is *first* applied, it has the beneficial effect of *constricting* the blood vessels, *i.e.*, decreasing their capacity and so lessening the tendency to

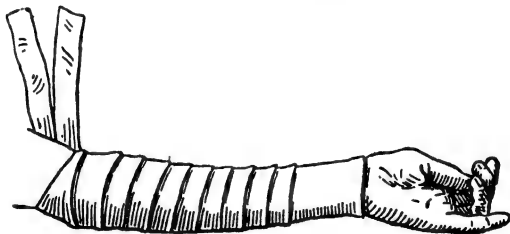


Fig. 23.
A bandage for the arm. The ends split for tying.

increased flow of blood and engorgement, when this action *ceases* the reverse condition develops, and the effect is an enormous dilatation, the previously constricted vessels then tend to become congested and increase the inflammation.

Caution.—In the case of elderly people it is best not to employ cold, or excessive cold, such as an ice bag, to inflamed



ELLIMAN'S FOR MUSCLE ACHE.

parts, as the cold tends to depress, *i.e.*, lessen the already diminished vitality of the part, now further injured and depressed, first by the cause of the inflammation be it sprain or what not, and secondly, by the inflammation itself. *Heat from the commencement is best in such cases.*

The same applies to young children.

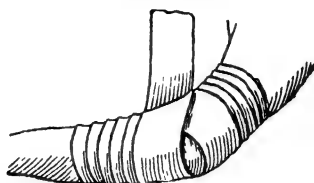


Fig. 24.
Elbow bandage, the last turn not completed.

SPRAIN TREATMENT.—Second Day and following.

Second Day.—On the second day after the accident, discontinue any cold water bandages or such cold treatment as has been adopted, thoroughly foment the part with hot water for ten minutes, then dry rapidly but gently, pour some Elliman's on to the palm of the hand and gently rub the affected area from

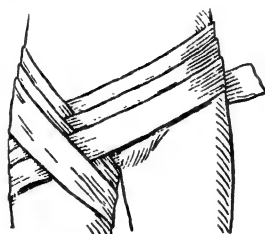


Fig. 25.
Groin bandage.

below upwards repeatedly, *until the Embrocation has disappeared*, when some more may be poured on to the palm and the process repeated for from five to ten minutes. Then wrap the joint or part in dry cotton wool or flannel, bandage firmly and elevate the part on a pillow.

This treatment to be adopted at first, twice a day, the vigour of the rubbing increasing gradually, but the skin should not be chafed, nor blistered by the use of irritating liniments, and the

process may be increased to three times a day, and kneading or other movements of massage gradually utilised (pages 13-20).⁴

Mild Sprains in which there is little inflammation may be treated *at once* according to the above second day treatment.

The Reason Why.—*On the second day after the sprain*, the cold applications should be discontinued, because by this time the object aimed at, viz., to check inflammation, will have been achieved, or it will have failed; in either case, *heat* will now be found, in combination with Elliman's and rubbing, to be the most efficacious.

The effects of Sprains upon the Joint may be so serious as to merit separate attention from the sprain itself.

In very severe sprains the inflammation extends to the joint itself, giving rise to a condition called *Synovitis*.

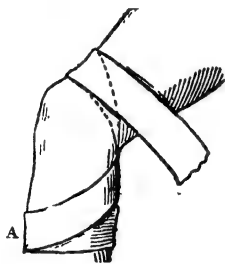


Fig. 26.

A. First turn of a knee bandage.

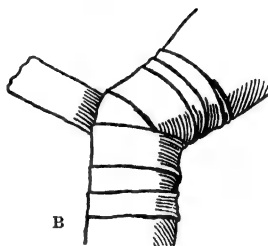


Fig. 26.

B. Last turn uncompleted.

This Synovitis greatly increases the damage caused by the sprain, on tissues outside the joint or on the ligaments alone.

As many other causes than sprain give rise to synovitis, and the treatment within limits is essentially the same, the reader is referred to the section on joints (page 50).

Other effects of Sprains are called **adhesions**. These may be present inside the joint if much synovitis be present, or outside the joint.

By adhesions are meant fibrous strands which develop as the result of the inflammation, and bind down the various ligaments, or the ends of the bones, or the lubricating membrane of joints in such a way as to prevent free movement, or again if slight they may cause considerable pain during certain movements or on

severe exertion of the joint, without mechanically preventing such movement.

It is the breaking down of such bands of fibrous tissue which brings such renown to the bonesetters.

The prevention of these adhesions necessitates great care in the treatment of sprains, and at the same time constitutes one of the special spheres of usefulness of Elliman's.

PREVENTION OF ADHESIONS.

Their prevention consists in treating the sprain as we have directed previously (page 41), and resorting to *early* massage with



Fig. 27.

Foot and leg bandage, showing also how to "Reverse" the bandage.



Fig. 28.

Adhesive strapping as applied over Ulcers.

Elliman's combined with douching or fomenting, and of moving the joint *backwards and forwards gently* at the *end of the 4th or 5th day* after the injury, and continuing to do so every time the massage is done. It is not the patient who should move the joint by muscular effort, but the masseur or attendant who should manipulate the joint; sufficient movement to prevent adhesions, *but no more*, should be permitted for the first ten days, else repair of the damage done by the sprain is interfered with.

Rest for 10 or 14 days is a cardinal feature in the successful and thorough *healing* of a *severe* sprain, and should never be

departed from. A slight sprain needs less time. If the patient be permitted to get about too early the consequence is :— •

A Weak Joint.—This constitutes the commonest sequence of bad treatment of sprains. The swelling persists, and owing to the patient insisting upon getting about too soon, repair cannot proceed properly; as a result whenever the ligament torn or overstretched is called into use and should support the joint in a certain movement, it fails entirely or partly to act, thus incapacitating an otherwise probably healthy person from enjoying full liberty of action, and depriving him or her from participation in games and outdoor exercise. Special instruments have often to be worn to compensate for this weakness, all of which might have been avoided by *rest* and Elliman's.

The Development of Tubercular Disease (consumption) not infrequently follows such injuries in people predisposed to consumption by hereditary weakness.

The surest means of combating such onset of disease is to get the joint into a healthy condition as soon as possible, and to counteract the depressing effect of the injury by stimulating the blood supply to the part by means of friction, with Elliman's, and rest.

Note.—In elderly people prolonged rest even of healthy joints causes considerable stiffness. Hence absolute fixation of the joints in elderly people must not be prolonged, unless it be for fractures.

JOINTS, THEIR INJURIES AND DISEASES.

Synovitis.—In speaking of sprains we mentioned that Synovitis (page 55) frequently followed these injuries. Other causes of synovitis are wounds, blows, falls, bruises, slipping of the cartilages (*see* page 59, diagram 32, No. 3), and dislocations, or it may follow a chill, especially it is said in gouty and rheumatic subjects, or the fevers of childhood, scarlet fever, measles, diphtheria, etc. Typhoid, smallpox, blood poisoning, tubercular disease (consumption) may result in synovitis.

Synovitis is an inflammation affecting the secreting membranes of joints. Inside the capsule of a joint is a delicate

shining membrane (the synovial membrane), which secretes the joint oil, called Synovia, which lubricates the joint in its movements.

Following an injury of the nature mentioned, or from other causes, this membrane becomes inflamed, its secretion in the early stage is much increased, and soon an exudation of varying amount occurs into the joint cavity and distends it.

Signs.—If the inflammation is slight the symptoms are not marked, but a most intense inflammation may occur, rapidly

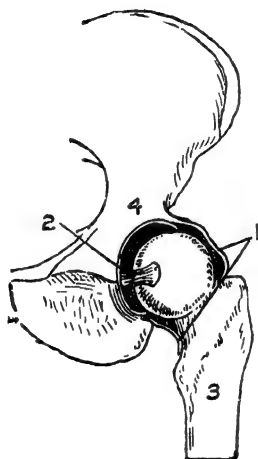


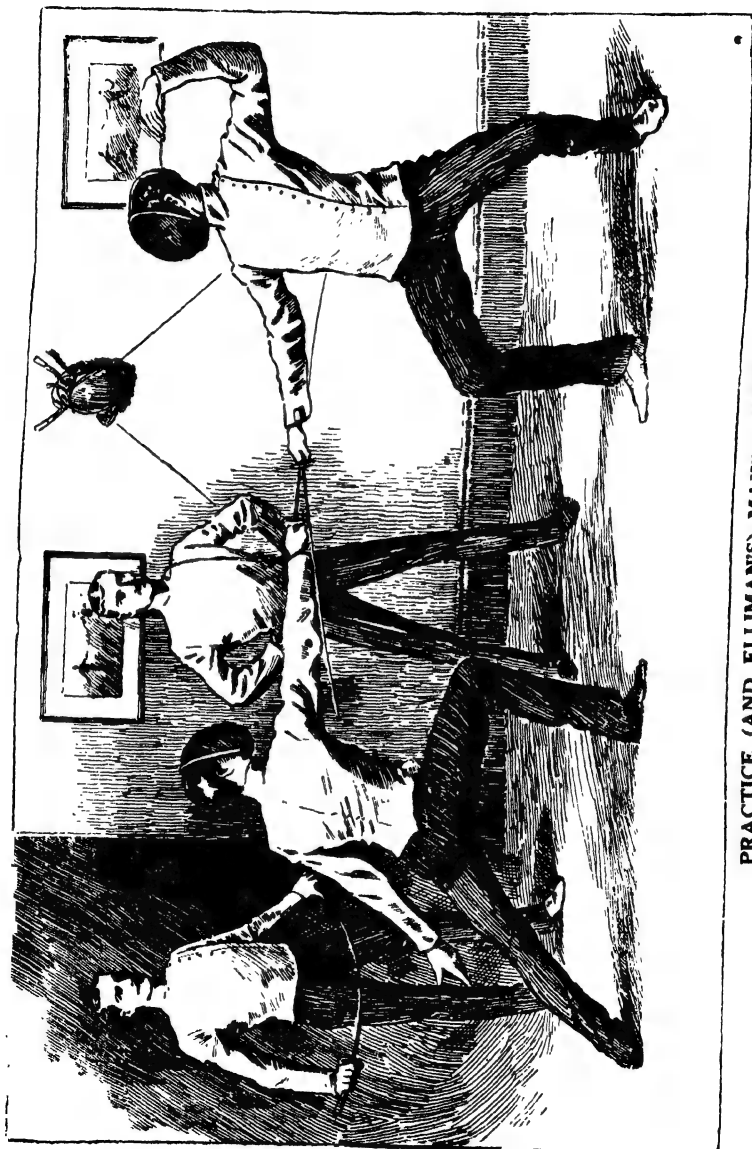
FIG. 29.

Showing a hip joint opened from the front. The capsule is lined by a secreting membrane called the synovial membrane which in synovitis becomes inflamed, and exudes a large amount of fluid in the cavity of the joint, which it distends.

1. Capsule of the Hip Joint, forming a complete Membranous Cavity lined by secreting Synovial Membrane, and strengthened in its anterior part by strong Ligaments.
2. Round Ligament lying entirely inside the Joint.
3. Femur or Thigh Bone.
4. Pelvic Bone.

going on to the formation of pus and one of the most serious conditions possible may result, *i.e.*, abscess in the joint.

A medium attack of synovitis is evidenced by pain in the joint, slightly increased by movement, and at night, or on hanging the limb : *swelling* is always present, but in the hip and shoulder such is not very obvious, a fulness of a definite shape or contour only



PRACTICE (AND ELLIMAN'S) MAKES PERFECT.

being visible, upon account of the amount of muscle. There is slight *tenderness* in the hip and shoulder, the *signs of redness and heat are absent*, but in other joints they are present. The limb is *held fixedly* in the position of greatest ease, usually slightly bent, and movements are avoided as much as possible. Fluctuation due to the fluid in the joint, can be obtained, *i.e.*, place two hands on the swelling, a few inches apart, now press with one fairly sharply, the other is felt to be raised; this sign is always present over a fluid swelling. Some amount of fever may be present.

An acute attack of Synovitis may become chronic, resulting in great weakness of the limb. The signs are then those of a fluid swelling in the joint, practically free from pain and tenderness. Movements are free. The one great symptom is that of *weakness*, which engenders dread of using the limb, any unusual strain or movement being carefully avoided.

The cause of this weakness is obvious. Inflammation softens the ligaments and capsule, these are then stretched by the distension of the joint with fluid, and so their function, that of binding the bones firmly together, is lost.

The recurrence of acute attacks aggravates the condition.

Treatment of a synovitis due to injury, other than a wound of the joint.

First and foremost, absolute rest, best secured by fixing the limb on a splint or in a sling. If these be unavailable then place the limb upon pillows. The immediate application of constant cold (page 43) by ice bag, cooling lotions, or by means of a *Leiter's Tube* (page 54). The latter consists of a leaden or rubber tube made into a coil and placed on the joint. One end leads from a vessel containing water suspended a foot or two above the level of the coil and the other leads into a pail placed on the floor. A constant current of water in this way circulates through the coil and is the best means of applying constant cold or heat.

Precaution.—A piece of flannel must intervene between the skin and the coil, or death of the skin by “sloughing” may result. Secondly, the water must not be too cold, nor must the vessel containing it be raised too high, as this increases the rate of flow, and too great a degree of cold results, this being in proportion to

the rate of flow. Cold is harmful to elderly or very young people. Should the pain be great after two days' cold treatment, leeching may be beneficially used (page 222), or fomentations with Elliman's (page 89).

When the pain is relieved, and the inflammation has begun to subside.

Pressure is now exercised to aid absorption of the fluid. This

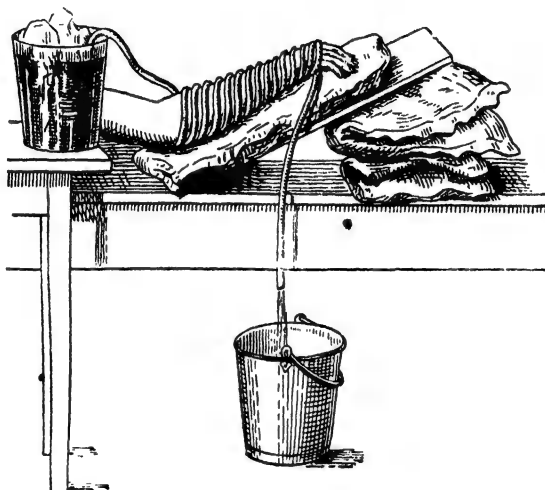


Fig. 30.

LEITER'S TUBE.—Showing coil of piping wound round forearm, with method of applying cold.

The piping can be coiled also on the flat like a diagrammatic "coiled snake in the act of striking" and applied to any part of the trunk or head, being kept in position by a bandage. The head of the snake is bent into the pail and its tail drains into another vessel.

is best applied by means of a Martin's Elastic Bandage, which is rolled on just in the way an ordinary bandage is used. (See Martin's Bandage, page 104.)

This bandage is kept on continuously except for ten minutes night and morning to enable the joint to be gently massaged with Elliman's (page 13-20), but first bathe the part with warm water, and wipe dry. Gentle movement of the joint may be performed in about ten days to prevent adhesions (page 49).

When Chronic.—If this treatment does not reduce the

swelling, and the synovitis becomes *Chronic*, then blistering is advised. (See Blisters, page 85.)

When the pain and tenderness caused by the blisters has passed, vigorous massage with Elliman's three times a day is necessary, a Martin's bandage being worn in the intervals.

The hot air treatment (Tallerman system), *i.e.*, placing the joint in a chamber containing superheated air followed by massage and friction with Elliman's, is often most useful. There is a cheaper apparatus called "Bier's Hot Air Chamber," supplied by various instrument makers, or by the Holborn Surgical Instrument Makers, Thavies Inn, Holborn, London, E.C.

If adhesions (*see* Sprains, page 48) form in the joint, the services of a surgeon will be required.

The *general treatment* consists in giving the patient mild purgatives and "low" diet, *i.e.*, milk food, beef tea, jellies, and light solids.

SYNOVITIS FROM A WOUND ENTERING THE JOINT.

A wound of a joint is a most serious condition, and where surgical aid is obtainable, no home treatment must be attempted, beyond putting on a piece of clean linen soaked in diluted Elliman's, strength, 1 in 2 of water. But where the individual injured has to depend upon lay skill, great effort must be made to keep the joint clean.

The wound may be due to gun-shot, stabs by knife, spikes or pieces of iron, nails, etc. A compound fracture or any form of severe crush may tear the tissues and open up the joint.

If the wound is due to a small puncture with a clean knife, it may heal very rapidly, and only a mild synovitis result, or if the wound be a large one allowing *free drainage* from the joint, the consequence may be much less serious.

If it is a wound of intermediate size, produced by dirty weapons too large to heal immediately, but admitting septic germs and dirt yet not allowing for the *free drainage* of the joint, which sets up the most virulent form of joint disease (abscess in the joint).

Treatment.—If the wound be small and clean, put on it a pad of lint soaked in *diluted* Elliman's (1 in 2 of water), and immediately cleanse the surrounding skin by means of soap and

water and clean pieces of linen, then dress the wound with some fresh diluted Elliman's, applied by soaking a clean piece of lint or linen in the diluted Embrocation. Over this place some cotton wool or another piece of linen, and round the whole a bandage.

Keep the limb at *perfect rest* on splints or pillows, and elevate the part so that the foot is the highest (or the hand if the upper limb be involved). In every case, except elderly people, put over the bandage an ice-bag, in the case of elderly people apply dry heat by means of a bran or sand bag heated in the oven. Change the dressing twice a day. At the end of 10 days, if the wound be healed, treat the synovitis (page 55).

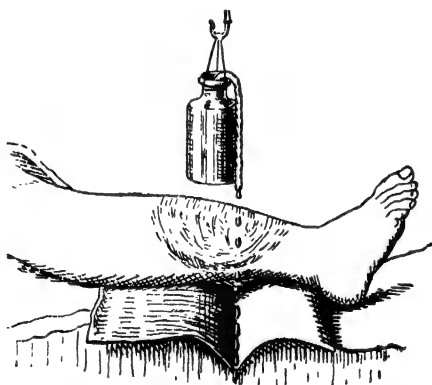


Fig. 31.

CONSTANT IRRIGATION BY HOT OR COLD LOTIONS.—Beneath an injured inflamed leg is placed a mackintosh to drain away the lotion and protect the bed.

If the *wound be large*, the best treatment is to thoroughly clean the part as before, then put the limb on a splint or pillows, and use *constant irrigation*. Fill a vessel (jug) with clean (boiled) water, fix it about two or three feet above the limb, tear a piece of flannel into strips about two inches broad and boil them. Then hang two or three such boiled strips from the vessel, allowing one end to be in the water (which must be tepid) in the jug and the other end dangling over the wound.

By capillary attraction and gravity, a constant stream of drops of water will flow over the wound and keep it clean. A skein of wool may be used instead of flannel strips. The splint and bed-

ding must be kept dry, and the water conducted away by suitably arranging a piece of mackintosh.

For Irrigation.—Elliman's being an antiseptic, one teaspoonful (3·5 c.c.) may be added to every pint (600 c.c.) of water used for irrigation. The solution must be thoroughly stirred at intervals. Boracic acid crystals, one teaspoonful (4 gm.) to a pint (600 c.c.) of tepid water may also be used. Either is good treatment to adopt, and as the consequence of the injury may be serious, too much trouble cannot be taken to thoroughly irrigate the wound.

When the part is beginning to heal, and all signs of inflammation have subsided, a simple antiseptic wet dressing of lint soaked in Elliman's diluted with 2 or 3 parts of water (*see Wounds*, page 120) may be applied until the whole has healed.

The splint must be retained until complete healing has occurred, otherwise, a permanently *stiff* joint will result, and a definite position of that stiff joint is necessary, for the limb to be of *any* service. When the knee is involved, the leg must be kept quite straight; if the elbow, the forearm must be bent almost at right angles; if the ankle, the foot must be at right angles; if the wrist, the hand must be straight.

In mild injuries resulting in slight stiffness the latter should be treated after the wound has healed as described under *Adhesions* (page 49).

If the Synovitis is "going wrong" and *Abscess* is forming, it is due to the fact that the blood and exudation in the joint is decomposing. The cavity of the joint should then be thoroughly syringed with a hot solution of Elliman's (one teaspoonful to a pint of water (3·5 to 600 c.c.)) or boracic lotion, and antiseptic fomentations applied (page 87). As a rule, enlargement of the wound or fresh incisions are necessary to drain the joint.

Diet.—Fluids, and plenty of them. Keep the bowels regular. The pain is unusually severe; opium may be taken when it is unbearable.

Laudanum, 5 to 20 (·3 to 1·2 c.c.) drops every 5 hours for an adult, for children above 12 months, half to 3 drops.* Small quantities of stimulants may also be needed in severe cases.

* **NOTE.**—*Drops* abroad hold good as they do in England; but above five it is best to give the equivalent in decimals.



ELLIMAN'S FOR STIFFNESS.

Some Other Common Affections of Joints.

SLIPPED KNEE.

Certain joints may be sprained in peculiar ways owing to peculiarities of structure.

Thus the knee is commonly sprained through what is called "displacement of the internal cartilages." These are pads of cartilages which act like washers between the ends of the thigh and shin bone (*see* diagram 32, No. 3). In certain movements these slip out from between the bones, or get doubled up.

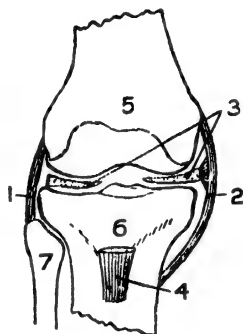


Fig. 32.

Showing the knee joint and its ligaments and cartilages from the front. Displacement of either internal cartilage from between the ends of the bones constitutes slipped knee.

1. External Lateral Ligament.
2. Internal Lateral Ligament.
3. Internal Cartilages.
4. Patellar Ligament.
5. Femur.
6. Tibia.
7. Fibula.

At the same time, a sprain occurs. The result is Synovitis, and as the slipping out tends to recur again and again the condition is a serious one

Causes.—Striking the big toe with the knee slightly bent, or slipping in this position—this is common when receiving a ball in playing lawn tennis, missing a kick at football, squatting on the heels, sudden twists, etc.

Signs and Symptoms.—A sudden severe pain is felt on the inner side of the knee, usually the patient falls with the leg slightly doubled up under him. He feels sick and faint, and he is *quite unable to straighten or bend* the knee at first, *i.e., it is locked*. He can hardly stand, and walking, except on tip-toe and by limping, is impossible.

Soon he regains the power of bending his knee, but *cannot fully straighten it*. Occasionally the cartilage suddenly returns into the joint with sudden relief of pain, and enables the knee to be fully straightened.

The knee begins to swell and the patient gets an attack of Synovitis. Often a small swelling can be felt on the inner side of the knee, and a feeling of something having slipped is experienced.

In milder cases, slight pain with inability to straighten the limb and swelling of knee occur. Occasionally the outer side of the knee is involved.

Treatment.—Make the patient sit on a high chair, stand facing him, and press your thumb firmly against the swelling, grasp the ankle with the other hand, and fully *bend* the knee, then maintaining pressure with the thumb, swiftly and forcibly straighten the knee. You thus press back the slipped cartilage, and great relief at once results.

Put a pad of cotton wool on the inner (or outer) side, cover the joint in cotton wool and bandage firmly. Put the patient to bed and treat the Synovitis (page 53). Heat or cold, etc., may be used to relieve the pain. After the swelling has disappeared, an elastic knee-cap, or better still a leather knee-cap must be worn for months. Leave this off at night and massage the joint with Elliman's.

No games or violent exercises to be indulged in for some months.

PULLED ELBOW

Is found in young children. It is a form of sprain of the elbow.

Causes.—Swinging children by the arms. Jerking the child by the hand, as in lifting it by one hand suddenly.

Signs.—The arm is a little bent, with the palm looking downwards. It is not used much, *i.e.*, the child avoids doing things it used to do with the affected arm, and if handled pain is caused and the child cries. *There is no swelling or redness or other sign of inflammation.*



Fig. 33.

PULLED ELBOW.—The radius is partially dislocated from the humerus by the sudden jerk of saving the child from falling or in swinging it by the hand, its head being partially pulled through the annular ligament which embraces it (see diagram 15, page 30).

Treatment.—Hold the upper arm firm with one hand, then bend the fore-arm, at the same time turn it, so as to make the palm look *upwards*. Then straighten the fore-arm. Relief is felt if the treatment is successful, and the arm can be fully straightened.

A click may often be felt and the arm can be used more freely. Then rest it in a sling, a few days after which massage with Elliman's.

SPRAIN OF THE THUMB

Is due to severe strains. The ball of the thumb swells rapidly, bending the thumb into the palm is impossible, and attempts to

do so are painful. The power of picking up anything between the fingers and thumb is lost. There is a projection on the back where the thumb joins the wrist, which can be reduced, *i.e.*, pressed into position easily, but very often returns at once.

Treatment.—Try to prevent inflammation in the usual way (page 41). Then apply a pad of cotton wool or flannel over the swelling on the back and bandage it firmly. In a week's time the pad may be left off, and gentle massage used. Very slight movement by bending may also be made if the ball of the thumb be held firmly between the finger and thumb of the other hand, so as to prevent displacement. To prevent permanent stiffness make vigorous use of the Elliman's with massage (pages 13 and 49).

SPRAINS OF THE FINGERS

At the junction with the palm are very troublesome, inasmuch

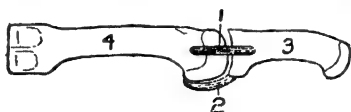


Fig. 34- A

1. Lateral Ligament of a Finger Joint.
2. Anterior Ligament of a Finger Joint.
3. First Phalanx or Finger Bone.
4. Metacarpal or Hand Bone.

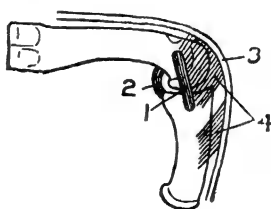


Fig. 34- B

1. Lateral Ligament.
2. Anterior Ligament.
3. Tendon on back of finger with
4. Its lateral prolongations forming capsule and attaching it to the bones.

Showing part of straight finger with the anterior cartilage (2) and the lateral ligament (1) which retain the finger in place.

In B the finger is bent and the tendon on the back of the finger with its prolongations forming the capsule of the joint is shown. 2 is here in its normal position but in sprain of the finger due to too forcible bending backwards it gets wedged in between the two bones and prevents the movement of bending.



ELLIMAN'S FOR GUN KICKING.

as they leave some swelling permanently. The thumb and index finger are oftenest involved, being so liable to be bent backwards violently.

Signs.—Severe sickening pain and immediate swelling, especially on the back of the joint, *i.e.*, usual signs of Synovitis from sprain. The finger is half bent and cannot be straightened or bent fully.

It is really a condition of slipped cartilages as in the knee.

Treatment.—Pull the finger (diagram 60, page 135) and at the same time manipulate the part where the swelling is with the finger and thumb of the other hand to replace the cartilage. This may result in relief. Failing this, treat in the usual way to prevent inflammation and stiffness (pages 49 and 53).

DISEASES AND INJURIES OF MUSCLES AND TENDONS.

Sprains of Muscles with or without rupture of some of the muscles fibres are very common, and are due to any sudden violence such as may occur during games or severe labour. They especially are liable to occur when a person falls or tends to fall by slipping, etc., certain muscles being then suddenly brought into violent use to preserve the balance. The back muscles and the muscles immediately in connection with joints are the commonest involved.

The Common Signs are—Pain in a certain muscle or part, increased on any exertion which brings the special muscle into activity. *Stiffness* and tenderness on pressure. Often a little *swelling* due to escaped blood, and slight inflammation.

Treatment.—Absolute rest and cold applications (page 41), followed on the second day by fomentations (page 87), massage (page 13) and friction with Elliman's (pages 28, 47 and 48) is the proper remedy.

In elderly people, warmth throughout and gentle rubbing (page 45). The condition of sprain may be followed by an abscess in tuberculous patients, or it may result in a chronic stiffness with pain in gouty and rheumatic subjects, in which case internal

remedies and dieting (*see* page 82) are necessary in conjunction with vigorous use of Elliman's. In such cases slight blistering (page 85) will be found very useful.

BRUISING, *i.e.*, CONTUSION OF MUSCLES

Results from blows of any kind, and is usually associated with tearing of some muscle fibres and escape of blood into the part.

The Signs are the same as in sprain of muscle and there is often discoloration of the skin. Occasionally a considerable collection of blood occurs, forming a distinct swelling.

Treatment.—In severe cases, rest for two or three days, apply hot fomentations on which Elliman's may be sprinkled to allay pain; to be followed by regular rubbing, douching and massage (*see* page 13, *also* page 232).

In slight cases of Bruising and Sprain immediate friction with Elliman's, after bathing the part with hot water for ten minutes, will give earliest relief and cure (*see* page 232).

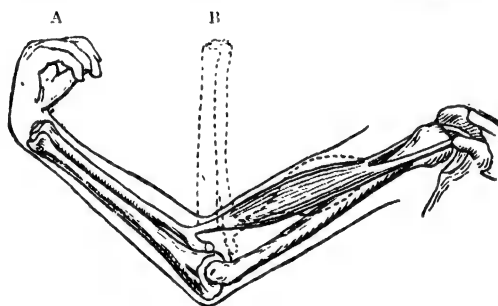


Fig. 35.

TREATMENT OF RUPTURE OF BICEPS.—Showing the action of the biceps. When ruptured the forearm must be fully bent (B) and a bandage passed round upper and lower arm to retain it in this position.

Sprain and Bruising of Muscle are often difficult to differentiate from sprain to the joint or Synovitis due to injury. In the latter any movement, whether done by muscular effort of the patient or *by the attendant*, is painful. In bruising or sprain of muscle, movements may be performed *by the attendant without producing pain*, so long as such movements do not stretch the injured muscle.

RUPTURE OF THE SHEATH OF A MUSCLE.

The services of a surgeon are required at once. Every muscle has a sheath of fibrous tissue (*see* pages 34, 71). This sheath may be ruptured and the contents may partially escape, *i.e.*, protrude through the rent.

Causes.—Violent exertion, severe bruising and wounds. The “Biceps” and the anterior abdominal (belly) muscle “Rectus” are the most frequently involved (*see* diagram 13, No. 7).

Signs.—Pain, weakness and a semi-solid swelling not unlike a swelling due to escaped blood.

Biceps Treatment.—Absolute rest with the limb in a position to take off all strain on the muscle. In the case of the Biceps the fore-arm should be fully bent and bound in this position (*see* diagram 35). Later, after a week or ten days very gentle massage with Elliman’s twice daily, and slight movement by the attendant once daily.

In the case of the *Rectus* put patient to bed, raise the head well on pillows and put a pillow under the *buttocks*; after ten days, massage with Elliman’s (page 13).

RUPTURE OF MUSCLES.

The services of a surgeon are required at once.

The Causes of Rupture of Muscles are similar to those which produce sprain, but rupture of muscle is more prone to happen in elderly persons; and sprain in younger persons, such as vigorous horse riders, acrobats and athletes.

Signs.—At the time of rupture, sudden *pain* as if a blow were received, or often of a feeling as though lashed by a whip. A sudden *snap* may be felt or heard. *Inability to use the limb* in a certain way (according to the muscle injured). Soon signs of bruising appear. If the middle of the muscle is ruptured a *pit or gap* will be felt between the two severed ends. If ruptured at the thin part where the muscle becomes tendon, the muscle will be found shortened into a *hard mass and its connection with the tendon lost*.

General Treatment.—Rest the part in such a way as to take off all strain from the muscle, for a sufficient length of time for repair—four to six weeks. Then gentle movement, friction with Elliman’s, douching with hot water (sea-water is especially good) will relieve the resulting weakness and stiffness.

Often adhesions (page 49) result, causing inability to use the muscle, or pain on movement ; these adhesions will, if not dense, give way under suitable kneading, pinching, and massage with the finger tips, and the vigorous use of Elliman's. Usually, however, an anæsthetic must be given, and the Surgeon breaks down the adhesions by force, after which friction with Elliman's may be beneficially employed, and movements made to prevent re-formation.

RUPTURE OF TENDO ACHILLES.

The services of a surgeon are required at once. Athletes, especially gymnasts, suffer mostly. It occurs in the effort to leap, when about to take off from the ground, or when reaching on to tip-toes while lifting heavy weights. Rupture occurs oftenest three inches or so above the heel, but not infrequently the piece of bone into which the tendon is inserted is torn away.

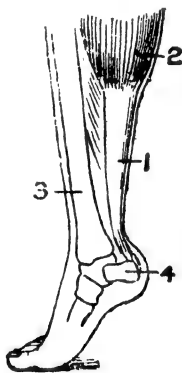


Fig. 36.

Showing how the calf muscles raise the heel, and the position in which rupture of the tendo achilles occurs, this takes place at the narrowest part of the tendon.

1. Tendo Achilles.
2. Calf Muscles.
3. Tibia.
4. Os Calcis or Heel Bone.

Symptoms.—Usual signs of rupture (page 66), also a distinct break or gap can be felt in the tendon, and the heel cannot be raised off the ground, *i.e.*, it is impossible to walk on tip-toe ; progression becomes a shuffle.

The treatment recommended is to be found under Sprains of Muscles (page 34) in conjunction with the following :—

Treatment.—A strong slipper is put on the foot, with a hole through its heel part, or a loop of leather may be sewn on to it. A broad leathern strap is buckled loosely round the thigh just above the knee. The knee is now bent to a right angle, the toes are made to point downwards, and another strap connects the heel of slipper with the thigh strap, so as to retain the limb in this position. The patient must be kept in bed immovably fixed in this way for five or six weeks, after which the apparatus may be taken off, and the foot gently moved backwards and forwards, just a few inches at first. Gentle friction with Elliman's over the rupture may be used twice daily for five minutes after the first week following the accident. After the apparatus is removed, massage and movements are continued for another three weeks without any effort to walk. Then gradually by the aid of a stick the patient may get about. Three months will elapse before work may be resumed, and six months before violent exertion undertaken, otherwise the young fibrous tissues will stretch and defective use result. Massage will strengthen the muscles which have wasted through inaction (*see* diagrams 5 and 7).

LAWN TENNIS LEG

Is a rupture of some of the fibres of the calf muscle. It occurs in middle-aged men while playing tennis. A slight shock as if the leg were struck by a tennis ball is felt on inner side of calf. Pain and weakness on movement is experienced, and slight bruising occurs in twenty-four hours or so.

Treatment.—Rest, with immediate cold (page 41). Then heat and friction with Elliman's three times a day. (*See* Muscle Rupture, page 66).

RIDER'S SPRAIN OR RUPTURE

Is due to rupture of the prominent muscle which can be felt along the inner side of the thigh (*see* diagram 42, No. 1).

It is caused by a rider suddenly gripping the saddle with his thighs to retain his seat when the horse swerves or attempts to unseat him.

Symptoms.—A sudden sense of something having given way, pain and a trickling as of warm water down the inner side

of thigh. The grip is very weak and painful, and the rider has to dismount. Walking also causes pain. Marked staining of the skin occurs in 24 hours. Sometimes a gap is felt in the muscle.

Treatment.—Temporarily wind a stirrup leather round the thigh over the breeches. Later a pad must be placed over the seat of rupture and the thigh and pelvis bandaged. Call in a surgeon. Massage will aid the absorption of the blood, etc., and tends to prevent Rider's Bone, which follows either a bad sprain or repeated hard riding as in "rough riders," etc., and for which nothing can be done.

RUPTURE OF THE QUADRICEPS TENDON (THIGH TENDON).

This tendon unites the big muscles of the front of thigh to the knee cap (*see* diagrams 42, No. 8 ; 62, No. 4). It may be ruptured by a sudden violent effort when the knee is half bent, to prevent falling, or in football kicking, etc.

Signs and Symptoms.—The usual signs just given and total inability to straighten the leg from the bent position. It is possible to mistake this condition for fracture of the knee-cap itself.

Treatment.—The leg is put upon a back splint in the straight position for six weeks, cold applications being applied early. Gentle massage from the second day. When the splint is taken off, gentle movements are permitted as in other cases, at first very gently. To strengthen the part and prevent adhesions, stiffness, etc., use massage with Elliman's (*see* Adhesions, page 49).

A back splint consists of a straight piece of board as wide as the limb and padded with strips of flannel. It reaches from the buttock to below the calf and is bandaged in position.

DISPLACEMENT OF TENDONS.

Ricks, as they are called, are due to tendons slipping out of their position. Certain tendons form grooves along bones which they play over, these grooves are shallow, and little bands of fibrous tissue, called Annular Ligaments, exist to prevent the tendons slipping out.

During sudden movement of an unusual kind, especially twists, or from great swelling due to inflammation pushing out

the tendon, the tendon slips out of the groove, often with rupture of the annular ligament.

Signs.—Sudden pain, localised to the position of the displaced tendon, is experienced. The usual movement of the muscle involved cannot be executed freely and only with pain. If the tendon is near the surface it can on comparison with the opposite side be felt in an unusual position.

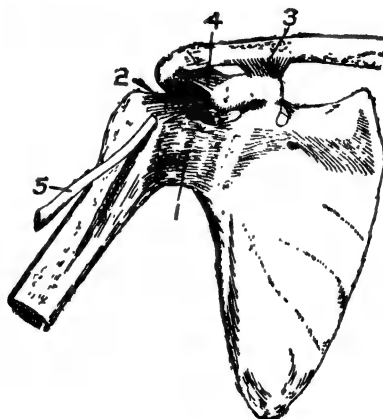


Fig. 37.

DISPLACED TENDONS.—The shoulder joint, and long biceps tendon; the latter is frequently displaced from its position in the groove, represented by the dark shading, from which it has been raised in the diagram. Just where it enters the joint above it has a small process of bone on either side of it which considerably impedes its replacement.

1. Capsule of the Shoulder Joint.
2. Superior Ligament of the Shoulder Joint.
3. 4. Ligaments suspending the Shoulder Blade from the Clavicle.
5. Biceps Tendon raised from the groove in which it normally lies.

The commonest tendons involved are those on the outer side of the ankle bone, the tendon of the biceps at the shoulder (*see* diagram 37, No. 5), and the small tendons of the back muscles.

Treatment.—Immediately endeavour to replace the tendon, by kneading it into position with the thumb, relaxing the muscle by putting the limb in a suitable position while so doing. If this does not succeed, press the tendon firmly towards the groove and get the patient to suddenly use that muscle.

When successfully replaced, the limb must be kept at absolute rest for one month by splints and bandages, else the displacement

will recur. After this time gentle movements and massage with Elliman's will break down any small adhesions and relieve the stiffness.

Gentle rubbing with Elliman's from the first is helpful as in all sprains. This may be done without removing the splint in many cases, or the splint and bandages may be removed while the massage is performed and then replaced.

If unable to *replace* the tendon, adhesions will form retaining it in its new position, but constant and early movements (*i.e.*, no rest on splints), also application of Elliman's, must be made, to ensure useful and free action and painlessness in its new situation.

INFLAMMATION OF THE SHEATHS OF THE TENDON (TENOSYNOVITIS).

Every tendon has a sheath, the function of which is to secrete a viscous fluid similar to the synovial fluid of joints, to lubricate the tendon and so make it run smoothly. The inner surface of the sheath is beautifully smooth and shiny, reducing friction to a minimum.

Excessive strain in those unaccustomed to it, or prolonged usage of certain muscles in walking, feathering oars, cycling, prolonged labour, also blows, and extension from an adjacent injury gives rise to an inflammation of this sheath, causing it to swell up and become rough, so interfering with the proper and free movement of the contained tendon.

Signs and Symptoms are pain of a hot burning nature on using the affected muscles, and swelling or fulness along the course of the tendons, tenderness on pressure and, lastly, a peculiar creaking or rough sensation felt by the patient and by the fingers of the attendant when placed over the swelling at the time the muscles are used.

Lawn Tennis Arm is a similar condition. The middle of the outer border of the fore-arm is slightly swollen, but not red, and is tender to the touch. Any movement, especially the "back-hand" action, causes pain.

Cyclist's Ankle is a similar condition.

Treatment.—Absolute rest for some days is essential, with cold applications in the early stage (some people recommend heat

FRONT OF UPPER LIMB. BACK OF UPPER LIMB.

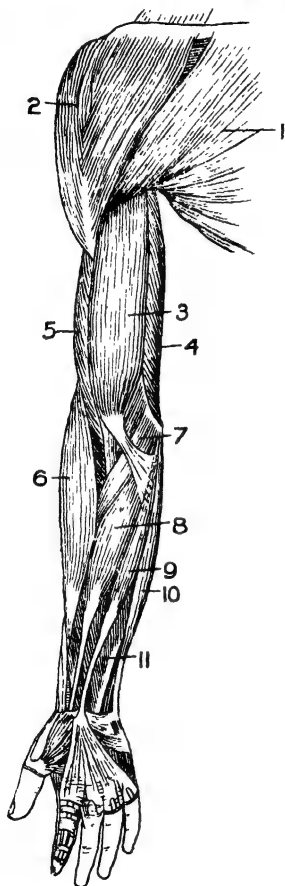


Fig. 38.

1. Pectoral Muscle
2. Deltoid
3. Biceps
4. Triceps, seen from the front
5. Anterior Brachial
6. Long Supinator
7. Pronator
8. Radial Flexor
9. Long Palmar
10. Ulnar Flexor
11. Flexor Sublimis

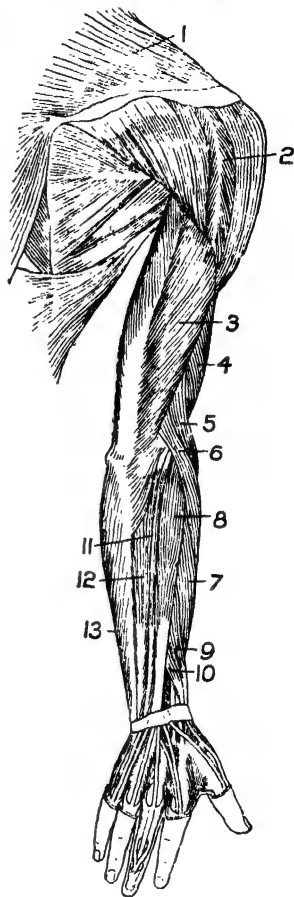


Fig. 39.

1. Trapezius Muscle
2. Deltoid
3. Triceps
4. Anterior Brachial, seen from behind
5. Long Supinator
6. Long Radial Extensor
7. Short ditto
8. Common Extensor
- 9 and 10. Extensors of the Thumb
11. Extensor of index Finger
12. Ulnar Extensor
13. Ulnar Flexor winding round to the front

throughout), then stimulation with Elliman's two or three times a day, and pressure by firm bandage. Painting the area swollen with iodine may be useful, but the most effective treatment is the rubbing with Elliman's and rest.

Sometimes the acute inflammation goes on to abscess, a most serious condition needing immediate operation; this usually is associated with wounds. One form of whitlow is due to this cause, and may result in total destruction of the tendon and a stiff finger or even loss of the whole hand.

CHRONIC TENO-SYNOVITIS

Is of two varieties, *one* follows an acute attack in which the patient has been badly treated or in which the patient would not give the part rest, and so it has become chronic. *2nd Tubercular Teno-Synovitis.*

It is most important to differentiate between them, but this is often difficult and a surgeon should be consulted. Both may need operation, but the former can usually be successfully treated without.

Its signs are a practically painless swelling, not tender when pressed on, which feels fluid, *i.e.*, soft and boggy. Some creaking is present and *weakness* is a marked sign. The condition is due to the accumulation of synovial fluid something like white of egg, but thicker and more glutinous than normal.

The commonest tendons to be involved in a simple Teno-Synovitis are those stretching the thumb away from the palm (*see* fig. 39, Nos. 9 and 10), and the swelling produced is found on the outer border of the fore-arm passing from behind forwards within a few inches of the wrist.

Treatment.—Stimulating with Elliman's by rubbing and kneading the part with the Embrocation three times a day.

If this should fail, the part may be slightly blistered by using Elliman's (*see* page 85) and then pressure by bandage applied for two days, to be followed by systematic rubbing.

If no improvement results, a surgeon should deal with the case.

This treatment is injurious to *Tubercular Teno-Synovitis*. This form is characterised by absence of an acute attack—though not always—greater chronicity, a family history of consumption, no

improvement under foregoing treatment and a gradual increase in size or area of swelling.

GANGLION

Is the name given to a swelling or cyst found in connection with tendons, most commonly on the back or front of the wrist, or near the knee joint. It may be one form of chronic Teno-Synovitis due to repeated sprains, otherwise its real cause is obscure.

[Signs.—It is a rounded, smooth, very tense swelling, slightly movable from side to side, free from all pain and tenderness, slowly increasing in size. Its one great symptom is a sensation of weakness in the part, and inability to grip powerfully. It contains jelly-like substance.

Treatment.—If small they can be ruptured by a sharp blow with a heavy book, or by forcible pressure with the thumbs. The contents being forced into the tissues about. If this be successfully accomplished, a disc of cork or halfpenny wrapped in a little lint must be bandaged firmly over the area of the swelling and retained for three or four days.

These cysts are very apt to return. Should they do so, or should it be impossible to burst them, a surgeon should be seen. Often some swelling persists for a long time after the ganglion has been “dispersed.” This is best removed by regular massage with Elliman’s.

INFLAMMATION OF BURSÆ OR OIL BAGS.

Bursæ are small pouches found over bony prominences and points of pressure. They secrete glairy synovial fluid, for the purpose of protecting the bones beneath from injury and friction. Those most commonly diseased are situated over the knee-cap and its ligament, and over the point of the elbow. They are liable to become inflamed by injury as in kneeling on hard floors, blows, and exposure to cold, especially in rheumatic and gouty people.

When the Bursa over the knee-cap is diseased it is called **Housemaid’s Knee**, which arises from kneeling without a pad, or kneeling repeatedly and suddenly upon a hard floor, which irritates and inflames the bursa; fluid thus exudes into it causing swelling.

Signs are a painful fluid swelling just *on* or below the kneecap. The skin is hot and slightly red. Walking is painful. As in all inflammation slight fever may be present.

Treatment, if acute.—Absolute rest. Best secured by means of a back-splint (page 69) to the leg and thigh, with the foot elevated on a pillow. Fomentations (page 87) relieve the pain. Then, in four or five days, gentle friction with Elliman's or repeated small blisterings (page 85), followed by wrapping the part in cotton wool and applying a firm bandage to aid in the absorption of the fluid. At the end of a week massage with Elliman's is recommended.

This condition may become *chronic* usually from neglecting to rest and treat the acute stage thoroughly. Then repeated blistering with Elliman's followed by massage and rubbing when the blister has healed, or wearing a Martin's Rubber Bandage (page 104), combined with vigorous massage night and morning are usually successful.

Eventually a great many of these chronic cases are operated on, the entire bursa or bag being removed to ensure their permanent cure, as they relapse so frequently. In gouty or rheumatic subjects suitable internal remedies (page 78) with the external treatment are desirable.

Prevention.—Use of kneeling pad and care.

Miner's Elbow is a similar disease over the "funny bone." It is commonest in miners, who often work lying down with one arm supporting them in the recumbent position, all the weight being borne by the upper part of the fore-arm.

Treat as above, *i.e.*, by rest, fomentations and gentle friction with Elliman's while acute; vigorous friction and slight blistering to promote absorption later.

BUNION.

When excessive friction or constant pressure is exerted on a part, nature tries to minimise its effect by producing an artificial bursa or oil bag; such a one is most commonly developed on the inner side of the foot at the base of the big toe. At first it is unnoticed but it occasionally becomes inflamed, and during these attacks of inflammation great pain is caused.

Each attack enlarges the bursa, through distension by the exudation produced, it also thickens the tissues about it, and the bone beneath the bursa becomes inflamed (Periostitis), and this leads to deposit of new bone on its surface. So a lump is produced on the top of which is the bursa.

The presence of this lump increases the friction and so a "vicious circle" is formed, one condition increasing the other.

Unfortunately, the trouble does not end here, but a deformity of the big toe results (Hallux Valgus), which over-riding the second toe causes in its turn a hammer toe. All these conditions cripple the sufferers severely, rendering locomotion painful.

Signs are those of inflammation of a bursa (*see* Housemaid's Knee, page 74).

Treatment.—When *inflamed*, the removal of all causes of pressure is secured through the amount of pain rendering the wearing of boots unbearable. It is best to rest completely, if possible, and apply hot fomentations (page 89), sprinkled with Elliman's.

After the acute pain is relieved, gentle rubbing with the embrocation will aid the absorption of the fluid, and prevent the Periostitis becoming chronic.

An apparatus may be worn to pull the big toe into position, and so relieve the pressure on the bunion.

After many attacks the wall of the bursa becomes thickened, and cannot be reduced without operation, at which the whole bursa is removed, and the bony growth excised.

Prevention.—First as to stockings. These should be a fit; they should be neither tight nor loose. The toes should be square or, better, a separate stall should be provided for the big toe. Stockings are sold with 5 finger stalls, but a separate one for the big toe is satisfactory. Such can be easily made at home by running two rows of stitches, $\frac{1}{4}$ inch (6 m.m.) apart, meeting at the top end, and cutting between, using a stocking a size too large for ordinary wear. The boots may be quite "anatomical" yet not look unsightly. They may also be anatomical, and pointed if such are preferred. In any case the boot should be big enough and long enough, *i.e.*, fit the foot with comfort. Unfortunately, the

foot usually has to accommodate itself to the boot. A boot, the sole of which is narrower, or even just the size of the bare foot when resting on the floor whilst the person stands, is obviously too small. The heels should not be high.

GOUTY SYNOVITIS.

Gouty Synovitis is due to certain injurious ingredients floating in the blood, which become deposited in the cartilage of joints. An attack occurs most commonly in the joint at the ball of the big toe, but any joint may be involved, and more than one at a time.

Signs and Symptoms.—Its occurrence is usually most *sudden*, probably in the night while in bed, a sudden excruciating pain awakening the patient; soon the skin becomes red, hot, shining, considerable swelling occurs, there is *exquisite tenderness* to touch and the very motion of extending the hand as if to touch the joint induces a sudden spasm of pain. Any movement on the part of the patient, or a shake of the bed or bedding, gives rise to great pain. If it were possible to press the part it would be found *oedematous*.

Pain seems less as the day progresses, but gets worse again at night; this continues for five or six consecutive nights, when it gradually subsides, leaving the part still swollen but not painful.

It is most common for the disease to fly to another joint, but if it does it commonly attacks the opposite big toe.

Repeated attacks of gout in the same joint or in separate joints constantly occur.

Treatment during the attack. *Never* use cold, it is injurious. Dry heat is best, the joint should be wrapped in cotton wool and lightly bandaged, then elevated on a pillow. Or fomentations (page 87), sprinkled with a little Elliman's, will relieve the pain.

The hot air treatment, where possible, is useful (page 55).

Take off the weight of the bed clothes by a cradle. A useful cradle can be made from a "band box" put over the foot with a place cut out to admit the ankle.

Administer a purgative at the onset. During the attack the following mixture may be taken :—

Colchicum Wine	-	-	-	10 to 20 drops (.6 to 1 c.c.)
Citrate of Lithium	-	-	-	5 grains (.3 to .5 gram.)
Bicarbonate of Potash	-	-	-	20 grains (1.3 gram.)
Water	-	-	-	1 ounce (28 c.c.)

To be taken every four hours till pain relieved.

During intermissions, Aspirin 5 grains (.3 gram.) twice a day.

Diet.—Milk, beef tea and barley water.

RHEUMATIC SYNOVITIS (i.e., ACUTE RHEUMATISM)

Is only one manifestation of a blood disease which affects the whole body, and may produce either most serious heart disease, St. Vitus' Dance or various other disturbances. Hence get skilled advice.

If from any cause a doctor is not available then the following will be a good guide :—

Signs.—The patient may be of rheumatic family and have had a chill. A sore throat is often complained of for some few days, and a feeling of being out of sorts and languid, with indefinite pains flying about the limbs. Suddenly fever sets in with rise of temperature 100° to 104°, at the same time one or more joints may become very painful and swollen.

Severe sweating and often a red rash appears on the body and joints.

The patient may become slightly delirious, but on account of the pain produced by movement is not very restless. The joints become red, hot, very tender and swollen with oedema. As one joint improves another becomes painful, this being very characteristic of rheumatism.

Treatment.—Put patient to bed at once, *between blankets and in flannel night-shirt*. Wrap the joints in cotton wool, give a mild purgative, and put on milk diet. No solids to be given.

The following mixture may be given to an adult every four hours for three days :—

Salicylate of Sodium	-	-	-	10 to 20 grains (.65 to 1.3 gram.)
Bicarbonate of Potash	-	-	-	10 to 20 " (.65 ")
Peppermint water	-	-	-	1 ounce (28 c.c.)

After the temperature falls to normal, which it usually does by the third day, the dose must be reduced to two-thirds every four

hours, then after another three days, three times a day, and in this strength may be continued a fortnight longer. When the temperature reaches normal give a little milk pudding or bread and butter, and so very gradually increase the diet. When convalescent, great care must be taken to avoid colds, and an iron tonic should be given.

Aspirin	-	-	-	-	5 grains (.3 gram.)
Water or milk	-	-	-	-	1 oz. (28 c.c.)

To be taken twice a day for some weeks.

One attack is liable to be followed by others.

Note.—That *growing pains* in children are often due to rheumatism, and are accompanied by heart affections, so they must not be pooh-poohed, because they seem so trivial; a physician should be seen, or the patient put to bed for a week or ten days, on low diet, and the affected joint or joints rubbed twice a day for five minutes with Elliman's. St. Vitus' Dance also follows this condition, and this must be treated by rigidly isolating the child, thus securing absence of excitement, and using gentle massage of the irritable limbs with the Embrocation. Give nourishing food. Give the above mixture in $\frac{1}{4}$ to $\frac{1}{2}$ strength doses for four or five days.

CHRONIC RHEUMATISM.

Under this heading may be classed a number of somewhat allied but nevertheless separate diseases:—

1. Ordinary chronic rheumatism is the form in which usually true rheumatism attacks middle-aged people.
2. Poor man's gout, rheumatic gout, or as it is technically called Osteo-arthritis or rheumatoid arthritis, a very common condition affecting poor and rich alike.
3. Various other conditions not adapted for discussion in this book.

We will discuss the former two, and as they are very like in character and treatment will not differentiate between them.

The Causes are obscure, but middle-aged people, women who have to do charring, or persons who work in the fields, or are in other ways exposed to variations of temperature, are the chief sufferers.

Injuries in the region of joints, sprains, fractures, synovitis

from any cause are followed by these conditions. Heredity is said to be an important factor, also depressed unhealthy conditions of mind and body.

The Signs and Symptoms.—Occasionally an acute attack may occur. Usually not. Often small joints such as those of the fingers or backbone or jaw only are involved. Still another variety affects one big joint alone, hip, shoulder, etc. But the variety most general begins insidiously, *i.e.*, very gradually, first in one pair of joints, the knees being commonest, then spreading to other joints, until in some cases all the joints are involved.

The condition has periods of quiescence followed by increase in the symptoms.

The Symptoms are pain, often gnawing, and worse in wet weather (rarely this increase of pain occurs in warm dry weather). It is also worse when in bed, or after resting, and when getting up in the morning. Relieved after getting about or using the joints a little.

A sense of great and increasing *stiffness* also relieved by usage.

Creaking: a peculiar sense of creaking or crepitus felt by the patient on movement or by the hand when placed on the joint during movement. It feels like the creaking in teno-synovitis. This may be absent at times, *i.e.*, when the joint becomes distended by fluid.

Swelling which varies: sometimes there is considerable swelling from distension of the joint with synovial fluid, at other times none, but usually a little occurs. It is not red or hot, and tenderness is slight.

Changes in shape, *i.e.*, Deformity of the joint, occurs sooner or later; this is partly due to the fluid, also to changes which take place in the ends of the bones and cartilages, causing enlargement by overgrowth and lipping like the guttering of candles in a draught (*see* diagrams 40 and 41). A condition similar to ring bone in horses.

On account of these bony changes, *Locking* of the joint occurs, so that gradually movements become less and less until at last *absolute fixation* of the limb in an awkward position results. Great wasting of the muscles occurs.

Treatment.—It is the local treatment which effects most relief. But it is well at the outset to state that cure is the exception, and if the disease does not spread to other joints and the attacks of increased pain can be kept under, this is all that can be expected in the majority of cases.

In the case of one joint only being involved, some surgeons operate.

Rest is *not* to be taken, the occupation is *not* to be discontinued. Keep moving about, go on with exercise unless pain on movement be very great.

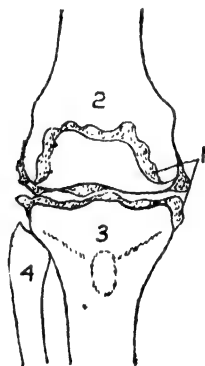


Fig. 40.

A knee joint looked at from the front, the dark dotted part showing the overgrowth of cartilage and bone causing the deformity of the joint so typical of this disease. "Chronic Rheumatic Gout."

1. The overgrowth of Cartilage and Bone shown by dotted part, the firm lines represent the Normal Bones.
2. Femur.
3. Tibia.
4. Fibula.

The remaining local treatment is summed up in Friction and Massage with Elliman's and the application of heat.

The joint or joints are to be wrapped in flannel or cotton wool.

Twice or three times a day, the flannel or cotton wool should be removed, and a vigorous application of Elliman's for ten minutes be made, thoroughly kneading the joint and working the limb backwards and forwards. Re-apply the flannel, on which flowers of sulphur may be dusted.

Those who are able to get treatment by the Tallerman method (Manchester Street, Manchester Square, London, W.) should have the limb kept in the hot air for 15 to 20 minutes ; also there is an apparatus called Bier's Hot Air Chamber, supplied by the Holborn Surgical Instrument Co., Ltd., 26, Thavies Inn, Holborn Circus, London, E.C. This can be bought at prices from 25s. to 50s., according to the variety, and can be worked at home.

A Turkish bath may be useful, then vigorously massage the joint and muscles with Elliman's, and move the joint about, lastly wrap up in flannel. This affords great relief to the pain.

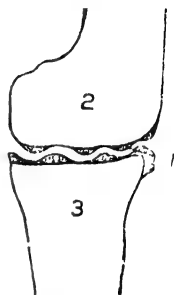
If the amount of fluid present be great, *blistering* is advantageous, and Elliman's can be applied on flannel to keep up the

Fig. 41.

Knee joint from the side, showing how the overgrowth of cartilage and bone causes pain in movement by the friction of the irregular new growth, also how essential it is to avoid rest, else the joint becomes mechanically fixed by interlocking of the processes which form, and which must be constantly worn down by movements and massage.

"Chronic Rheumatic Gout."

1. Overgrowth of Cartilage and Bone.
2. Femur.
3. Tibia.



counter irritation. In the early stages, treatment at Bath, or other mineral hot baths, affords relief.

A cold compress at night instead of warmth is found to do good in certain cases. Apply a wet cloth about the limb, cover with oiled silk, then cotton wool and bandage lightly. Take off the compress in the morning and massage thoroughly with Elliman's.

Avoid colds, damp and injury. Residence in a dry, warm, equable climate is desirable. Clothing should be of flannel, and warm. Pay attention to the diet, which should be nutritious and generous, unless the patient be gouty. Avoid cares and worry. A general tonic may be taken.

If there be a rheumatic history take Potash or Lithia water. Numerous drugs are given, most frequently Iron, Iodide of Potash, Salicylate of Sodium, and Arsenic in some form or another. Take mixture as on page 79. Consult a doctor.

A peculiar form affecting the small joints of the fingers, giving rise to pain and the formation of small lumps at the side of the fingers, is often seen. Treatment is exactly the same as for the preceding condition.

SCIATICA

Is either inflammation or neuralgia of the great Sciatic nerve.

Causes.—Frequently none can be found.

Men are more prone to suffer than women, especially after heavy muscular exertion or following exposure to damp and cold.

Often they have suffered from :

Gout or Rheumatism,

Injury by Blows,

Stabs, etc.,

Tumours,

Dislocations of the hip, causing pressure upon the nerve.

Certain diseases of the spinal cord and bones.

Constipation is another cause.

Signs and Symptoms.—Chiefly pain. It is gnawing or burning, and may be constantly present, but usually is worse at times.

The Pain may be sudden in onset and very severe, or there may be merely a sense of uneasiness, and gradual pain at the onset. In all cases it sooner or later tends to shoot down the back of the thigh and outer side of leg, often to the toes.

It may be present only after movements in certain positions. The line of the nerve along the centre of the back of the thigh and the fleshy part of the buttocks may be tender.

Walking is painful, sometimes impossible, the strain on the nerve is relieved by keeping the knee bent and walking with the knee bent and on tiptoe, cramp in the calf occurs at times.

A Test for Sciatica.—Put patient with his back to the wall. Keep his knee straight, and endeavour to raise his leg to a right angle with the body. If this be possible it is not Sciatica.

If it be Sciatica, pain is felt in the fleshy parts of the buttock and thigh when this is attempted.

Treatment to relieve the pain. Hot baths or fomentations, followed by brisk friction and kneading with Elliman's (*see* Massage,

page 13) should be done freely, say 4 or 5 times a day, along the back of the thigh and buttock, and where the pain is experienced.

Then strips of flannel soaked in Elliman's and covered by a layer of cotton wool may be applied vertically along the centre of the thigh (course of the nerve) and retained as long as possible. This forms a very strong counter irritation.

Take 5 grains ('3 gram.) of Aspirin twice daily if of Rheumatic tendency.

Five grains ('3 gram.) Antipyrin 2 or 3 times a day often relieves the pain. Recent treatment is to put the limb up straight on a back splint (*see* page 69), and rest in bed enjoined for a considerable period.

MUSCULAR RHEUMATISM.

Lumbago, wry neck, stitch, etc., are rheumatic affections of various muscles, and receive different names according to the part diseased.

Causes.—Rheumatic individuals exposed to cold or damp, or heavy and unusual labour, or exposure to draughts and sudden chills, especially when the muscles are fatigued ; one attack makes a person more prone to another.

LUMBAGO.—Sudden pain in the back, especially when rising from stooping, or when sitting down after hard work. Patient may be unable to rise or change his position in bed. Pain is dull gnawing, or sharp and cutting. It is relieved by pressure. It may pass off in a few hours or last for weeks. Little or no fever is present. A feeling of stiffness follows the relief of the pain.

Treatment.—Avoid causes. Endeavour to secure heat in all cases. Hot fomentations (page 89) and vigorous massage with Elliman's. Then put on a warm flannel bandage and retain in position. A Turkish bath may be taken. One may thereby cut short an attack, probably partly by virtue of the rubbing after the bath. A flannel binder may be worn with advantage during inclement weather by those subject to lumbago. Occasionally to sprinkle the binder with a little of Elliman's is at times beneficial. Give a blue pill followed by a Saline next morning.

WRY NECK is more common in children. In addition to above causes, other forms of wry neck are due to disease of the

nerves, lymph glands, or back bone of neck. Still a third form is due to an injury of the muscles at side of neck at birth, or subsequently (*see* diagram 13, page 29, Nos. 1 and 2).

It affects muscles at front and side of neck, and causes the patient to hold his head on one side. He cannot turn his head, and if he wants to look round has to turn his body. Severe pain is experienced in some cases. A form of spasm is occasionally present, which comes on whenever the patient attempts to turn his head, and immediately pulls him back into the distorted position, with or without pain.

Treatment.—Friction with Elliman's as in preceding paragraph; also ironing the neck with a flat iron over a piece of brown paper relieves the pain and stiffness.

STITCH or Pleurodynia involves the breathing or rib muscles, and as they cannot be kept quiet, because they are used in breathing, is a very painful disease. Every breath, cough, or exertion sets up a spasm of pain, usually on the left side, hence the patient tries to breathe as shallow as possible. The painful area may be tender to touch.

Treatment.—Strapping the side with plaster to restrict movement is best (*see* diagram 54).

A convenient way is to tightly apply a porous plaster, or to bandage the side over a layer of cotton wool. Failing this, treat with Elliman's and counter irritation.

The mixtures on pages 78 or 79 may be taken 3 times a day.

BLISTERS.

Blisters.—**What to use, and how to apply.** The commonest blisters consist of mustard or capsicum plaster. Elliman's on flannel. The liquor or the plaster of cantharides.

1. **Mustard Plaster.**—Always foment and wash the part before applying blisters, then dip the *mustard leaf* in hot water and apply moist. Cover with cotton wool or flannel. This is borne as long as possible, usually about 20 minutes. After removal there may be a collection of very minute blisters or bags of fluid, but this only occurs with very delicate

skins. Usually an area of redness results which is tender. The part should then be covered with cotton wool and bound up, or a linseed poultice applied to continue the action of the mustard.

2. **Capsicum Plaster** is more powerful.
3. **Elliman's** is applied by soaking a piece of flannel, wrung out of very hot water, in the Embrocation which must be previously warmed by standing the *uncorked bottle* in hot water. Put the flannel on the selected spot and cover with a piece of oiled silk or waterproof material, slightly larger than the flannel. Or if this be unavailable, use a piece of glazed or butter paper. Cover with cotton wool and a bandage, or put on a fomentation. *Leave on for some hours if bearable*, and renew if blistering does not result.
4. **Liquor of Cantharides** is painted on with a brush after washing the part with soap and water and fomenting. Use 3 or 4 coats and let it dry. Then put on a piece of clean linen or lint, and keep the whole warm by lightly bandaging over some cotton wool.
5. **Plaster of Cantharides** is cut to the size required. Foment the part. Hold the plaster to the fire for a few minutes until the surface begins to look shiny and moist, then put it on the skin, cover with cotton wool, and bandage as usual. Remove in 6 or 8 hours or later.

If the blister be successful a number of small vesicles or blisters, or a bag of fluid of varying size, is seen. The latter should be nicked along the edges with clean scissors to let out the fluid, and an antiseptic dressing if possible applied, such as a piece of boracic lint (failing this, *clean linen*), next to the blister. Cotton wool in sufficient amount to keep the part warm and receive the escaping fluid, should then be bandaged on.

Should it be necessary to keep up the counter irritation after blistering, remove the whole of the skin raised by the fluid, and dress once a day with resin ointment spread on a piece of lint or linen. This keeps the blister *raw*.

If, however, great pain is felt in the blister, a dressing of zinc ointment spread on lint, or weak boracic ointment may be used.

Flying Blisters.—Small blisters an inch square may be applied, one every day on a new area, over the region of a diseased part instead of using one big blister. A more continuous counter irritation may be obtained in this way. Some people call these Flying Blisters.

A Mustard Poultice may be made by sprinkling half a teaspoonful to a tablespoonful of mustard on the surface of a linseed poultice.

A Home-made Mustard Plaster is made by making a paste of the mustard with water and spreading on linen. It should not be put in contact with the skin, but a piece of muslin or tissue paper should intervene. For children equal parts of flour and mustard may be made into a paste.

Poultices of Linseed Meal.—(Bread poultice is practically useless.) *Warm a basin, spoon, towel, lint or linen.* Use water at boiling point. Pour some water into the basin equal in bulk to the quantity of linseed meal to be used, take some of the meal in the fingers, sprinkle it into the water and thoroughly stir with the spoon, add more until of sufficient consistency (like mixing flour and water).

The linen should be cut larger than the size of the poultice, and be spread on the *towel* on a table. Into its centre the prepared meal is turned and then spread with the spoon, leaving a margin of linen 1 inch or $1\frac{1}{2}$ inches all round. The margin of the linen is then turned over the edge of the meal. It should not be too thick, else its weight will be too great for comfort on a delicate person or a child's chest.

The poultice is carried on the towel to the bedside and very gently applied. It is best to place a layer of muslin between the skin and the poultice, because then the latter can be applied hotter without scalding the skin. Its consistency increases by standing, so make the poultice fairly fluid.

FOMENTATIONS are of two kinds, *antiseptic* and *non-antiseptic*. **The Antiseptic only** should be used for wounds or broken skin.

THE LOWER LIMBS.

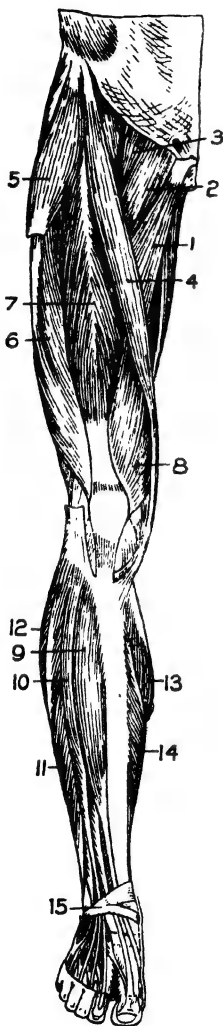


Fig. 42.

Front.

- 1 and 2. Adductors.
- 3. Pectineus.
- 4. Sartorius or Tailor's Muscle.
- 5. Tensor Femoris.
- 6, 7, 8. Quadriceps or Thigh Muscles.
- 9, 10, 11. Extensor Muscles of Leg.
- 12. Peroneus.
- 13 and 14. Gastrocnemius and Soleus, the Calf Muscles.
- 15. Anterior Annular Ligament of Ankle.



Fig. 43.

Back.

- 1. Gluteal or Buttock Muscle.
- 2. Part of the Quadriceps.
- 3. Biceps.
- 4. Gracilis
- 5. Semi-membranosus
- 6. Semi-tendinosus
- 7. Plantaris.
- 8. Gastrocnemius
- 9. Soleus
- 10. Peronei

} Hamstring Muscles.

} Calf Muscles.

Get some boracic lint, *i.e.*, lint which has been soaked in a saturated solution of boracic acid and then dried. Cut off sufficient to cover the inflamed part. Take a piece of thick flannel the same size, also a piece of oiled silk or mackintosh material a little larger, also some cotton wool.

Now place the boracic lint and flannel together in the centre of a towel, pour over them some boiling water till thoroughly soaked, fold the sides of the towel over the lint or flannel, and turn its two ends in opposite directions, *i.e.*, wring them, to thoroughly remove the excess of water. Take out the lint and flannel rapidly and *gently* place on the wound or inflamed part, the lint being next the wound, taking care that, with a little persistence on the part of the patient, it can be borne. Cover it with the oiled silk or mackintosh, then cotton wool and lastly bandage.

Instead of boracic lint, linen or plain lint can be used moistened with hot boracic lotion, one teaspoonful (4 gram.) to a pint (600 c.c.) of boiling water: or Elliman's, a teaspoonful (3.5 c.c.) to a pint (600 c.c.) of hot water instead of *plain* water.

Non-Antiseptic Fomentations are made by wringing flannels or sponges from hot water and then covering with mackintosh and wool as in antiseptic fomentations, or with another piece of flannel only.

COLDS.

Taking cold.

Colds are due to disturbance between the heat production and heat loss of the body, usually excessive loss of heat alone, which results in a condition of inflammation being set up in some part or parts of the body. Which part will be affected is largely an accident, it is not of necessity the part most exposed. Some people seem to be peculiarly susceptible to colds in the ear, others to colds on the chest, bladder, kidneys, etc.

There is no doubt that repeated colds weaken a part, so that a very slight cause will result in its taking cold, and that such parts are very liable to other diseases in consequence. The importance of not neglecting a cold is therefore obvious.

The conditions of the atmosphere most likely to result in cold are combined low temperature, dampness, and wind : especially found therefore in spring and autumn.

The immediate causes are—Insufficient clothing, badly protected feet, exposure while perspiring, prolonged exposure to draughts, going from a warm to a cold room. Exposure of a part of the body usually protected.

Irritating vapours, dust, certain odours produce symptoms resembling cold in the nose.

Sweating from severe exercise if suddenly stopped, and then the body exposed to draughts, results in severer conditions than cold, such as, Rheumatic Fever, Inflammation of the Kidneys, Pneumonia, etc.

The nose is so often the seat of a cold because it is the part which the cold air first comes into contact with. *But no doubt it is already predisposed, being affected with a "catarrh" too slight to be obvious to the patient,* due to previous neglected colds.

To Avoid Colds.—The clothing should not be too much or too little, always "comfortable." *Never coddle a part.* People who are subject to colds on the chest wrap themselves up, so that of necessity the chest readily perspires and consequently in *their* case the *slightest* exposure gives rise to a cold ; and so also with throats.

An authority has said " the chest is infinitely better protected in one liable to bronchial attacks by an extra *sole worn on the boots,* than a felt pad on the chest."

Pure wool is best, silk, linen and cotton interfere with evaporation and are not good absorbents.

It must be remembered that it is not the thickness of garments which is important, but their number—two thin vests for instance—enclose a layer of air between them, and this being a bad conductor prevents the passage of heat from the body or cold towards it.

It is the innumerable strata of air contained between the feathers of a bird which keep it warm, not the feathers themselves. Occasionally a thick article of clothing, such as the sole of a boot, acts mechanically.

Thin soles are perhaps the greatest cause of colds, because they allow very great loss of body heat, barely separating as they do the feet from the cold damp pavement or ground, and often letting in the rain or imbibing moisture.

Harden yourselves by free exercise, avoid sedentary habits. Take a *cold bath* every morning, or if this be too severe, as shown by subsequent lassitude, chilliness, absence of warmth of the whole body, take a cold sponge down to the waist, but do not take warm baths. If only one device were permitted to prevent colds that one should be the *cold tub* in the morning, of all things it is the most beneficial.

Treatment of Colds in General.—The principle is to supply the body with heat to make up for that lost. So at once take a hot bath, have a rapid brisk rub with a rough towel and go to bed *between blankets*. Just as you get into bed, have a good hot drink of milk, tea, or other non-spirituous drink.

If a bath be unavailable, take a hot mustard and water foot bath instead.

The evidence that heat has been *successfully supplied* to the body is *sweating*, therefore do not throw off the bedclothes if you sweat and feel uncomfortable. Help it by keeping warm, and retain the arms under the bedclothes. To promote sweating, take 5 grains (.3 gram.) of Dover's Powder in a little hot gruel, but should the chill have been severe take Quinine 5 to 10 grains (.3 to .65 gram.) instead.

In the morning *do not get out of bed* suddenly, but remove gradually the bedclothing.

After dressing remain indoors a few hours.

Should this treatment fail to cut short the attack, confinement to the house in an even temperature is essential, if the weather be inclement.

Thoroughly rubbing the part most subject to cold with Elliman's will greatly help to prevent its recurrence, and will certainly tend to prevent a cold becoming "something more serious."

ELLIMAN'S ADDED TO THE BATH.

Elliman's added to the hot or cold bath makes a silky and antiseptic bath. Experience will show the amount to be added to make the bath agreeable and comforting; from 1 to 3 ounces, according to the size of the bath, is recommended.

Added to the hot bath after severe exercise it prevents stiffness.

When there is Eczema or other skin disease Elliman's should not be used.

Added to the hot foot bath it is useful to prevent chill from feet being damp. Under the same circumstances it is good for bathing the hands.

When the feet are tired and feeling uncomfortable, and hot



HISTORY OF PHOTOGRAPH.

August 30th, 1911.

Some time ago whilst on the West Coast of Africa, I took a Photo of a Mohammedan Negro. Just as I was about to snap, he exclaimed, "Oh, I no got my Book!" and he dashed into his house (a palm leaf and packing case villa) and came out with your Elliman R. E. P. Handbook.

W. A. D.

The letter "R. E. P. Book" are faintly visible on the Book.

ELLIMAN, SONS
& CO., SLOUGH,
ENGLAND.

water is not available, washing the feet in cold water with some Elliman's added is most refreshing.

COLD IN THE NOSE.—To relieve the distressing pain over the root of the nose and forehead, a brisk rubbing with a little Elliman's and then application of dry heat by bran bags, or small water bottles, etc., over the nose and forehead is useful.

This also relieves the stuffy feeling so common before the discharge from the nose comes freely.

For the later stage when discharge from the nose is free, use the nasal douche of Soda and Borax, or Tannic Acid.

Formula for Nasal Douche.—Bicarbonate of Soda or Borax, of either half a teaspoonful to a pint of tepid water, or Glycerine of Tannic Acid, one teaspoonful to one pint of tepid water. Use half a pint each time of douching. Use a syringe.

SORE THROAT AND HOARSENESS FROM COLD

Is largely benefited by inhalation of steam.

Put in a jug some nearly boiling water. Add to it one teaspoonful of Friar's Balsam and inhale the steam for ten minutes every four hours. Also apply hot fomentations (page 89) sprinkled with Elliman's to the front of the neck.

For the Cough

Chloride of Ammonium	-	-	5 grains (.3 gram.)
Ipecacuanha Wine	-	-	10 drops (.6 c.c.)
Glycerine	-	-	30 drops, half a teaspoonful (1.8 c.c.)
Water	-	-	add to one ounce (28 c.c.)

Take every four hours.

When the attack is over accustom yourself to a bare throat.

Sore Throat from Cold.—Upon first symptoms Elliman's to be well rubbed in with the hand over the chest and throat when in bed; flannel should then be placed over the chest and throat.

HAY FEVER is a form of cold in the nose due to irritation by the pollen of hay. It occurs in the summer, with free running at the nose and sneezing. In some it is accompanied by fever-like influenza.

Treatment.—In the summer go to the seaside. Use the cold douche to the spine and treat generally as for a cold. Avoid hay.

During the Attack use the following snuff, a pinch every four hours, and douche once daily (*see* Formula for Nasal Douche, page 93)—

Bismuth Carbonate	-	-	-	2 drachms (7·8 gram.)
Magnesia Carbonate	-	-	-	1 drachm (3·9 gram.)
Cocaine	-	-	-	10 grains (.65 gram.)

TOOTHACHE FROM COLD.

Treatment.—Rest the teeth by abstaining from eating solids. Paint the gums with a mixture of equal parts of—

Tincture of Iodine

Tincture of Capsicum

once or twice daily, or apply a strip of capsicum to the gum after first drying it. Apply warmth to the cheek and use warm mouth washes of plain hot water frequently.

Take Phenacetin or Antipyrin, grains five (.3 gram.) every three hours until four doses have been taken.

Also a mild purgative.

If the tooth pulp is exposed, *i.e.*, the **tooth decaying**, two drops of oil of cloves or pure creosote on a minute pledget of cotton wool applied to the cavity, often gives relief.

Rubbing the face and gums with Elliman's sometimes eases the pain. In all cases fomentations mildly sprinkled with Elliman's applied to the cheek are soothing.

ACUTE BRONCHITIS

Is a dangerous disease and needs skilled attention, but the general treatment is to keep the patient's strength up by nourishing food. Keep the air of the room charged with moisture from boiling water in open shallow vessels placed about the room, or by means of a bronchitis kettle.

Relieve the pain by applying Elliman's on flannel to the chest and either poulticing the chest well or covering it with a jacket of warm dry cotton wool. Avoid draughts. In reality acute bronchitis is as dangerous as Pneumonia and may last longer.

Chronic Bronchitis and winter cough in adults and old people derive more benefit from vigorous application of Elliman's Embrocation and the general treatment mentioned under Colds in general (page 91) than any number of drugs.

The whole chest back and front should be well rubbed night and morning for ten minutes with the Elliman's.

CHRONIC COLD AT THE CHEST.

Upon first symptoms Elliman's to be well rubbed in with the hand over the chest and throat when in bed ; a piece of flannel should then be sopped with Embrocation and wrung, then laid upon the chest. This should be kept on for ten minutes after a sharp tingling sensation begins to be felt. Hot milk mixed with an equal quantity of Ems or Apollinaris water, half a wineglass of each mixed may be taken three or four times a day to help the cough.

The clothing *must consist* of flannel next to the skin. (*See Colds*, page 89.)

All cases are benefited by change of air. The desideratum is residence in a dry equable climate.

The diet should be nourishing and easily digested.

A Mixture of

Tincture of Squills	-	-	5 to 10 drops (.3 to .6 c.c.)
Chloride of Ammonium	-	-	10 grains (.65 gram.)
Spirits of Chloroform	-	-	10 drops (.6 c.c.)
Iodide of Potash	-	-	3 grains (.2 gram.)

Water to one ounce (28 c.c.)

three times a day will be useful.

For the cough at night and first thing in the morning, nothing is better than a glass of hot milk or water, on going to bed and awakening in the morning.

PLEURISY,

Or inflammation of the lining membrane of the chest wall. A doctor should always be called in if a person, after exposure, is attacked with sudden starting pain in the side, accompanied by fever with high temperature, short dry cough, and short painful respiration.

Until his arrival, hot flannels with a liberal sprinkling of Elliman's may be applied to the part frequently.

This often relieves the pain to a considerable degree and tends to prevent the progress of the inflammation.

Pains after Pleurisy are very common, any little chill, or an unusual exertion will result in a dull aching pain over the part affected. This is best relieved by a vigorous rubbing with Elliman's, or a blister may be tried (pages 85 and 87).

THRUSH.

Causes.—Improper diet, foul mouth, unclean feeding bottles, any fermentation in the mouth, and bad teeth, allow the growth of the *Fungus* which produces Thrush.

Signs.—It begins on the tongue as pearly white spots, which may then break down and bleed, increasing in size and leaving sore places. It extends to cheek and gums. Exquisite pain is caused when the sore places are touched.

Treatment.—*Prevention*, cleanliness of bottles, the use of bottles without tubing. Washing the mouth with lime water after each feed by means of a little wet rag or camel's hair brush. See to the digestive functions. Fresh air, wet nurse, etc.

When developed, first rub off the white spots with a piece of rag wrapped round the finger, then using a fresh piece of linen or a camel's hair brush, cleanse the mouth with

1. Borax and honey, or
2. Borax and glycerine, well painting the sore places.

QUINSY, INFLAMMATION OF TONSIL,

May go on to abscess formation.

Causes are hereditary tendency, rheumatism, gout, cold, bad drains, exposure to damp.

Signs.—Fever, temperature 102-104° F., pain in the throat and shooting into the ear, difficulty, discomfort or pain in swallowing, changes in the voice, thickness of speech, headache, swelling and tenderness in the neck and about the angle of the jaw. There is marked illness.

Treatment.—When a sense of pricking, dryness and soreness in swallowing is present, *i.e.*, in the early stages, apply cold compresses to the neck. Rub the throat under the angle of the jaw with Elliman's. Give ice to suck, also a mild aperient and fever diet. Painting the tonsils with glycerine of borax may abort an attack.

In the variety called Quinsy, which usually affects one side only at first and is very painful to the neck. Fomentations (page 87), or a hot water bottle, or hot flannels sprinkled with Elliman's may cut short the attack.

Friction with Elliman's for ten minutes two or three times a day to the neck under the angle of the jaw if not too tender.

At the same time a gargle of bicarbonate of soda, one teaspoonful (4 gram.) to a pint (600 c.c.) of hot water, may be used frequently, and steam inhalations made by adding a tablespoonful (15 c.c.) of vinegar to half a pint (300 c.c.) of hot water, then breathe the vapour, this "cuts the phlegm" and relieves pain.

A simple way to apply fomentations is to use a sponge wrung out of very hot water. If heat does not succeed in stopping the attack, it is proper to go on fomenting, etc., so as to make the abscess ripe and help it to burst.

Give a mild purge with castor oil.

After an attack a course of Quinine and iron is useful.

If a patient be rheumatic, let him take the mixtures given under Rheumatic Synovitis (page 78 or 79).

BACKACHE.

Situated in the small of the back, is a very common complaint in women, and is due to innumerable causes. Sometimes the fatigue of constantly standing, in others due to displacements of the uterus and ovaries, or to constipation. Or, again, any cause of increased strain on the back such as obesity, pregnancy, and tumours.

Signs.—Usually a gnawing, boring pain of a constant character, making life miserable, often without cessation from day to day. It gradually wears the patient's strength. Whatever its causes, it is probable that over-strain of the muscles of the back results, and is the source of the pain, and undoubtedly, in the majority of cases, is *greatly relieved by* massage with Elliman's, with or without fomentations (pages 13 and 87).

Similarly Kidney pain, which usually is on one side, is likewise benefited by vigorous massage and the counter irritation of Elliman's. A blue pill at night followed by a Saline in the morning should be taken occasionally.

CRAMP.

Telegraphists, writers, violinists, pianists, dancers, and others who use the same muscles for prolonged periods, suffer from a spasm of the affected muscles, entirely preventing their use for

some time. Cramp is the earliest sign of the exhaustion of the nerve centres, and so should be a warning for *rest*.

In Writer's Cramp the forefinger and thumb are most commonly affected, and the pen may be twisted about in the grip, or even thrown away by the spasm. In some forms the pen is so firmly gripped by the fingers it can only be removed with difficulty. Then a sense of uselessness and weakness follows with peculiar sensations in the part, sometimes numbness, and the skin may become shiny red.

Treatment.—Rest and change are two absolute essentials. In some cases of dancer's cramp, a few days' rest and massage with Elliman's twice daily will entirely relieve the condition, and a brisk rubbing and kneading with the Embrocation before undertaking the dance should prevent cramp.

In the other forms more prolonged rest is necessary and massage must be systematically carried out (*see* pages 13-20). Cod liver oil or iron and strychnine should be taken as tonics.

Prevention of writer's cramp is to write less from the fingers and more from the elbow and shoulder. Various devices have been created for enabling the sufferer to write.

RELAXED THROAT

Is found in people who smoke or drink much, also in public speakers, clergymen and those suffering from nasal troubles.

Signs, etc.—Sense of "rawness" in the throat, pain on swallowing condiments or hot drinks and alcohol. Slight irritable cough. Hawking of phlegm in the morning, huskiness and pain on speaking. The throat inside looks red and dry. There is considerable discomfort and depression of spirits.

Treatment.—Remove the cause, if smoking and drinking too much, discontinue entirely for a time; public and other speakers must have a rest. The nose must be treated—if there be stuffiness of this organ (*see* Nasal Douche, page 93).

A change of air, especially to the seaside, is beneficial. The diet must be looked to and regulated, as dyspepsia frequently accompanies the condition. Tonics may be given. Cold douching to throat, and gargles of chlorate of potash or alum water may be used. Tabloids of Guaiacum are useful.

Thoroughly rub the throat from ear to ear twice daily with Elliman's. Apply a *cold compress to the throat at night one hour after the rubbing*. Do not wrap up the neck during the day.

Public speakers by thoroughly rubbing the throat with Elliman's every morning after a cold douche to the front of the neck may help to give tone to the part, and prevent it becoming relaxed.

CHAPPED HANDS.

Roughness of the skin.

Prevention.—Always dry the hands thoroughly after washing. Then apply the following lotion or ointment, and especially at night, when gloves may be worn after smearing the hands with either application.

- | | | |
|------------------------------------|---|---|
| 1.—Sulphurous (not Sulphuric) Acid | } | Equal parts
mixed to form
a lotion. |
| Rose Water | | |
| Glycerine | | |
2. Lanoline and Glycerine, equal parts, make a very soothing ointment.
 3. White of two eggs, two tablespoonfuls of barley water, and powdered alum, as much as can be heaped on a shilling. Mix thoroughly, then paint on the rough parts.

Always add a little borax or liquid ammonia to the washing water, and, if the hands are very bad, use oatmeal water without soap to wash with.

In the usual way after washing and drying, use a little of the first lotion, and again dry by *dabbing* with a towel so as to leave on a minute quantity.

CHILBLAINS

Are due to imperfect protection of the feet, also not infrequently they are due to too tight boots. Defective circulation and anæmia are often present.

Avoid sudden and extreme heating or cooling of the feet and hands. Always keep them at as uniform a temperature as possible.

Treatment.—When the *itching first commences*, and the part is only slightly red, friction with Elliman's to the *whole limb* as well as to the *inflamed part* is most beneficial. A little of the

Elliman's diluted with two or three parts of water may be applied at night by wrapping pieces of linen soaked in this lotion round the toes or fingers.

Attend to the general health, treat the anæmia. Take exercise. Clothe the feet properly, always wear woollen gloves in the winter.

Cracked Lip is easily cured by first drying the crack, and then painting it with a little "blue stone," or lunar caustic. This is to be repeated in a few days, taking care to apply a little cold cream or vaseline once or twice a day in the interval, which will cure the condition in a week or ten days.

NEURALGIA.

Tic-douloureux, etc.

Causes.—Hereditary tendency to "nerves," hysteria, debility, anæmia, exposure to cold, mental anxiety, worry especially in women, *bad, i.e., carious teeth*, defective eyesight, gout. It follows various diseases.

Signs are sudden intense darting or stabbing pain along the course of certain nerves. It is not constant, but occurs in "paroxysm," gradually getting worse and worse until a climax is reached, when their intensity gradually subsides again.

The skin over the affected area may be tender and red or sweating.

Attacks last from a few minutes to hours or days, and may be brought on by sudden movement and draughts. Twitchings of certain muscles may be present.

Treatment.—First always endeavour to find the cause and have this treated. If no cause be found, send the patient to the seaside, look after the general health, state of the bowels, etc. Give tonics of iron, quinine, cod liver oil. The gouty must be dieted and pay a visit to a Spa.

During the Attack.—Heat as fomentations (page 89) or cold as ice may be tried. Apply a blister over the most tender spot, or use Elliman's on hot flannels till marked reddening of the skin results (*see Sciatica*, page 83), but not in facial neuralgia.

Give five grains (.3 gram.) Antipyrin every three hours for four doses.

During the intervals massage with Elliman's over the *course* of the nerve will usually prevent or diminish the intensity of attacks.

A form of neuralgia affects the fourth toe not infrequently and cripples the sufferer considerably.

Neuralgia of Joints is a condition not uncommon in hysterical girls or youths.

Signs.—They complain of indefinite pain, with tenderness of the skin, but there is no heat, *real* tenderness, or swelling, and if the patient's attention be distracted, jarring or handling of the joint does not produce pain. Free movement can also be obtained when their attention is engaged elsewhere.

Treatment.—Attend to the general health, diet, exercises. Give change of air, regulate the bowels.

Then massage with Elliman's, after hot and cold douche alternately (*see* Bath, page 22). Use a blister occasionally.

Remember Tubercular disease is very insidious, so be careful not to suppose a joint is necessarily free from disease because nothing definite can be found. Consult a doctor.



Fig. 44.

CURVATURE OF SPINE.—Illustrating the early stage of curvature as started by always carrying the child on the same arm.

CURVATURE OF THE SPINE DUE TO RICKETS, WEAKNESS, ETC.

In the majority of cases Curvature of the Spine is due to defective nutrition, rickets, rapid growth, too laborious

occupations in young girls, carrying heavy weights, lolling and standing about on one leg, sitting at desks awkwardly. Disease of the hip or other joints. Flat foot. The custom of carrying children always one way may start the curvature (*see* diagram 44).

Treatment of Curvature due to Weakness or Rickets. Improve the general health. Rest, lying flat on the back with the head low, for two or three hours twice a day. Do not let the child become fatigued. Make it sit *upright*, using a straight-backed chair. Never let it stand at ease, if tired let the child lie down flat. Give *short* exercises with the dumb bells or calisthenics and swinging on the horizontal bar, followed by rest on a flat couch.

Give cod liver oil, meat juice (page 162), and a more liberal and varied diet, and Parrish's Food, also a change of air is beneficial.

Always massage the muscles both sides of the spine night and morning; give a gentle cold douche to the spine with a sponge, well dry with a rough towel, follow by kneading and rubbing with Elliman's, the patient lying face downwards. This improves the tone of the muscles and ligaments.

FLAT FOOT

Is primarily due to strain on the muscles of the calf and feet in *young, feeble* persons. Thus *prolonged standing* by shop assistants, bakers, messenger boys, hall porters, barmaids, or the *carrying of heavy weights*, and fatigue from long hours of labour.

Also the wearing of tight shoes with high heels, bunions, and other abnormal conditions of the toes.

Previous illness resulting in weak health; in older people attacks of gout, sprains, and synovitis in the feet.

Signs are—Pain in the feet and legs, especially after twists, sometimes dull and aching, at others sharp and shooting. Swelling and loss of shape of the foot, *the arch is lost*, the foot looks long, the walk becomes shuffling, toes turned out, patient cannot walk briskly.

Pressure over certain bony parts causes pain.

Treatment in the early stage.—Rest, thorough massage of the calf and front of the leg, also the foot. Tonics and change of

air. A less laborious occupation, or one where sitting is permissible.

To improve the condition, sitting in the tailors' or Turkish fashion, walking with the toes turned *in*. The wearing of broad toed boots with low long heels. Later on, artificial supports inside the boots must be worn.

VARICOSE VEINS.

Causes.—Occupation involving prolonged standing, especially standing *still* (muscular contraction in walking helps the return flow of the blood). Sedentary lives, *Constipation*, *Wearing of garters*. Hereditary tendency. Swellings in the groin and pelvis pressing on the vein. Plugging of veins in Typhoid and other Fevers, etc.

Varieties of Varicose Veins exist.—1. Where large tortuous veins are seen, each quite distinct and separate. 2. Minute veins forming a red network in the skin.

The Signs and Symptoms are alike in both.

1. The presence of big veins, at first straight and prominent, later tortuous and beaded, or a meshwork of small veins.
2. Swelling of the feet and ankles, disappearing after a night's rest. Aching towards evening, with a tired heavy feeling in the legs and feet.
3. Redness of the skin, eczema, ulcers, and later a permanent swelling—chronic oedema—in the legs, which can hardly be pitted on pressure. Intense itching and heat are often present.

The effects of varicose veins are due to the fact that the return of the blood to the heart is impeded, and as a consequence chronic congestion or engorgement of the part occurs with sluggish absorption by the lymph channels.

Thus a low form of chronic inflammation results, the white corpuscles and the serum escaping from the blood vessels "coagulate" and form a *meshwork* in the tissues, giving rise to the hard firm condition which always develops sooner or later in varicose legs.

This still further interferes with the return of the blood and lymph, and also causes damage, *i.e.*, depression to the vitality of the tissues of the part. Any slight injury, such as a scratch, does not heal, therefore it becomes contaminated with germs, and so an ulcer results or an eczema forms and this results in ulceration.

Treatment.—Remove any discoverable cause, such as constipation. Suspenders should be worn instead of garters. Support the diseased veins. This may be done by elastic stockings or by Martin's Rubber Bandage.

Elastic Stockings should be worn over cotton stockings, else they irritate unbearably, they must always be removed at night, and the legs bathed and dried by rubbing upwards briskly, to stimulate the circulation in the skin. The general bath is best taken at night so as to enable the stockings to be put on in the morning *before* getting out of bed, *i.e.*, before the feet hang down at all.

Martin's Rubber Bandages are made perforated or plain. The best consist of black rubber. A bandage three yards long usually suffices. If they "draw" substitute other bandages.

They are simply *rolled* on the limb, beginning at and including the foot, up to the knee or higher if necessary, before getting out of bed; do not *pull upon the bandage*, simply roll it round and round the limb without overlapping.

At night the bandages are taken off and the legs bathed in warm water, then briskly dried and rubbed. The bandage is sponged with tepid water, and *hung up to dry*. In the morning dust the leg with this dusting powder:—

Oxide of Zinc,
Powdered Starch,
Boracic Acid,
Of each equal parts,

roll the bandage up, the string end first, then put it on.

In the later stages, *i.e.*, in the condition of chronic œdema, the exudation is best dispersed by thorough massage with ELLI-MAN'S (see pages 13-20) and elevation of the limb for a few days.

BLEEDING from a Varicose Vein is due either to an ulcer eating into the vein, or the bursting of one of the prominent knots in the vein during straining.

It is a most serious condition. Sometimes warning is given by the ulcer *bleeding a little*, without obvious cause, for one or two days, such should be an indication to rest entirely, elevate the limb and treat the ulcer (*see Wounds and Hæmorrhage*, pages 120-124).

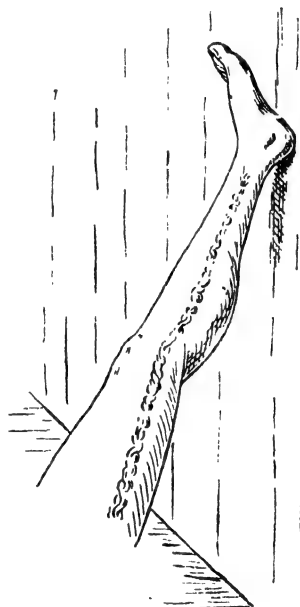


Fig. 45.

Showing leg elevated against wall in position to check bleeding from varicose veins and in which to remove dressings without recurrence of bleeding.

The bleeding, when a vein is opened, is enormous. The trickling of the warm blood calls attention to the condition. Immediately apply your fingers to the bleeding point and press firmly.

Then get a clean pocket handkerchief, tear off a strip and make it into a pad, put it on the bleeding point and bandage it

firmly with the remainder of the handkerchief. If the bleeding occur when out *walking*, *treat it* as instructed above and watch the wound to renew pad if required. Upon arrival at home elevate the leg well, then take off the pad and bandage, and thoroughly clean up the ulcer and surrounding skin with an antiseptic lotion, Elliman's (1 part added to 3 parts of water) being most convenient. Apply a new pad soaked in the lotion and bandage. Send for doctor.

Remember all bleeding can be easily stopped by pressure with a finger, if accurately applied on the bleeding spot.

INFLAMED Varicose Veins are a source of great danger because the blood contained in them becomes clotted, and if rest be not taken, such clots may be disturbed and carried to other parts of the body, where they cause serious mischief. *Massage and friction must, therefore, be strictly avoided* until 6 or 7 weeks have elapsed.

Signs.—Pain and tenderness in the leg, swelling and pitting about the veins, which feel like cords, with slight redness and heat. Cramp may occur. There is some fever.

Treatment.—Absolute rest for six weeks. Elevation of the legs. A slight purgative and low diet. To relieve the pain apply lead lotion on linen (page 216), frequently renewed.

After six or seven weeks, gently massage if any swelling persists.

ULCERS

Are most commonly found on the legs. Usually complicated and caused by Varicose Veins. To understand the rationale of successful treatment, the effects of Varicose Veins must be understood (*see* page 103).

The ulcers do not heal because the blood circulation is so defective and the tissues unhealthy and swollen.

Ordinary ulcers due to injury, not complicated by Varicose Veins, usually heal rapidly, but may, by neglect, become chronic also.

The Treatment is to treat both Varicose Veins and ulcers at the same time. To do so the dressings for the ulcers are put on under the elastic stockings or Martin's bandage.

Rest in bed, or on a couch, with the legs elevated is most essential at first. If the ulcer is foul, boracic or Elliman fomentations (*see* page 89) changed three or four times daily for four days will cleanse it sufficiently. Then a mild lotion may be used to bathe the ulcer two or three times a day, for which purpose use Elliman's diluted 1 in 3 of water, or boracic lotion.

In the intervals apply a wet dressing, *i.e.*, a piece of linen cut slightly *less* than the size of the ulcer, soaked in the lotion, cover this with a larger piece of oiled silk having a margin of $\frac{1}{2}$ inch beyond the linen, and then put on carefully the elastic stocking or bandage or adhesive strapping (*see* diagram 28, page 49).

A week's treatment with absolute rest will effect a great change. Then the wet dressing may be continued until complete healing has occurred.

Massage (page 13) carefully performed is invaluable in helping to promote the healing of ulcers, by breaking up the exudation, helping the circulation of blood and lymph, and stimulating the tissue change. Kneading and friction are the best for the purpose.

If the ulcer be *acute* and very inflamed, rest, elevation, and antiseptic fomentations is the best treatment.

Ordinary ulcers due to blows, etc., may be dressed with the moist dressing as above, kept in place by a bandage.

STINGS

By Gnats, Mosquitoes, Wasps, etc.

Apply a lotion containing Carbonate of Ammonia, 1 teaspoonful (3.5 c.c.) to a pint (600 c.c.) of water; or Elliman's 1 in 2 parts of water; constantly apply by steeping rags in the lotion and frequently renewing. Should the swelling and pain persist, an abscess may form. Antiseptic fomentations should then be applied (page 89).

INGROWING TOE NAIL

Is wrongly named, because the nail is quite normal. It is the inflamed flesh which grows over the edge of the nail.

The Causes are imperfect trimming of the nail, tight and high-heeled boots.

Prevention.—The nail should be cut square and not trimmed round at the corners.



ELLIMAN'S FOR STIFFNESS.

Cleanse the surrounding parts as described under Wounds (pages 121 and 122), and when this has been done, saturate a piece of lint or linen with the oil mixture and apply it to the burn. Frequently pour over the lint or linen some of the oil mixture. The lint should not be allowed to get dry nor should it be taken off the burn more than once a day, or even every other day if the burn be very painful. The part should be kept at rest, and the patient's general health and nourishment attended to.

- (c.) When the burn has involved a very large area of skin or a limb is completely incinerated, the shock is great and death may speedily result if the collapse be not treated promptly. In this case treat at once by placing the patient in a warm bath (page 111) without divesting the injured part of clothing.

The bath should, if possible, have a handful (or more according to the amount of water) of bicarbonate of soda or boracic acid added to it, and its temperature kept as constant as possible by extracting some of the water and adding hot water in its stead.

The patient is kept in the bath for three or four hours or longer, and while in the bath the clothing must be removed as gently as possible, if necessary it must be cut away. When the shock is passing off the patient is taken out and dried. The injured part is dressed with the oil mixture or enveloped in cotton wool and the patient is put to bed.

To Renew the Dressing.—The bathing may be advantageously repeated every day, the old dressing being removed in the bath, and new applied when the patient is taken out of the bath. This method of treatment is very suitable for children.

SHOCK AND COLLAPSE

(Stunning and Concussion treat as for Shock)

May result from almost any cause. The more serious condition is collapse, inasmuch as it is associated with conditions or illnesses which have already so exhausted the patient, that its onset may prove fatal.

Shock, on the other hand, is more like faintness and is less

persisting than collapse. The signs are very much the same as in a severe faint.

Shock Treatment.—At once put the patient in bed between blankets with the head raised on one pillow only. Apply hot-water bottles to the limbs and body. Give hot coffee or tea. Apply smelling salts to the nostrils.

If unconscious for a considerable length of time or unable to swallow, a nutrient enema containing brandy may be given (*see* page 202). Give either beef tea enema 4 oz., with $\frac{1}{2}$ an oz. to 1 oz. of brandy for an *adult*, or 1 oz. of beef tea with $\frac{1}{2}$ to 1 tea-spoonful of brandy for a *child*. It is not desirable to give alcoholic stimulants unless absolutely necessary. The great aim is to *gain* time for the heart to recover.

In *collapse* in addition to the above: *Feeding* is most important. As a rule swallowing is possible, so give fluid nourishment in small quantities, combined with a little stimulant, frequently.

If unconscious or swallowing be impossible, give peptonised nutrient enemas of milk and egg every three hours, with a little brandy.

The great point is to keep up the strength, nourish the body and prevent further waste, and repair that which has already taken place. The whole system is at its lowest ebb, it must not be injudiciously stimulated by large quantities of stimulants, else the last particle of reserve force may be exhausted.

BATHS

(*see* also pages 92, 154, 155)

May be—

- | | | | | | |
|----------|---|---|---|---|-----------------|
| 1. Cold | - | - | - | - | 40° to 70° F. |
| 2. Tepid | - | - | - | - | 80° to 90° F. |
| 3. Warm | - | - | - | - | 90° to 100° F. |
| 4. Hot | - | - | - | - | 100° to 110° F. |

These may be complete as in the ordinary slipper bath, or partial as in Sitz or Hip bath.

There are also the Shower, Vapour, and Turkish baths.

In preparing a warm or hot bath, first put in the cold water, and *add hot* as required, by doing so scalding is impossible. Never leave an invalid alone in a hot bath in case faintness occurs, when drowning is possible.

A person with heart disease will do well to avoid very hot baths for the same reason.

Do not allow a hot bath of longer duration than ten or twenty minutes.

A cold bath for an invalid should never take longer than five to ten minutes unless by physician's orders, as it becomes very depressing and may seriously injure the patient. If he looks blue and miserable, or is shivering, at once put him back to bed. If he continues uncomfortably cold, apply hot water bottles and give hot drinks. If very collapsed give a little weak brandy, or sal volatile half a teaspoonful in water (*see Shock and Collapse*, page 110).

Vapour Baths may be given at home easily.

Wrap patient in a blanket and put him to bed in the usual way, the head only being exposed. Now fill hot-water bottles and stoppered bottles (such as beer or soda water bottles) with hot water. Wrap them in pieces of flannel moistened by soaking in hot water, and put them around the patient *under the bedclothes*.

It is best to add an additional blanket or two to the bed-clothing. The patient is left in this condition till the bottles are quite cool, they are then gradually withdrawn and he is left for some hours still wrapped up in the blanket.

A Wet Pack.—The patient is wrapped in a blanket, wrung out of very hot water, and at once put on the bed and covered with four or five dry blankets. He is given warm fluids to drink and left for two hours. This produces free sweating, he is then rapidly rubbed dry and placed between warm dry blankets.

HÆMORRHAGE.

Hæmorrhage may be internal and external.

Internal bleeding occurs into any of the organs or cavities of the body and may be due to injury or to disease.

Its *occurrence* is known by :—Sudden pallor, faintness, sweating of a cold and clammy nature, weakness of the pulse, shallow breathing with occasional sighing, cold skin, the lips and ears may be livid, thirst is present.

If the bleeding is not severe but is prolonged, the patient becomes very restless, has dimness of sight, may hear noises, and any exertion at once results in fainting; he also experiences difficulty in getting breath.

Treatment requires great care. Fainting is Nature's mode of stopping bleeding, and to endeavour to stimulate a person's heart under these circumstances is to cause renewal of the bleeding, the stimulant so increasing the force of the heart's action that the flow of blood washes away the blood clot which has formed and acts as a dam, at the injured point.

What has to be done is of course to save life, but oftenest the best way to do so is to "*do nothing.*"

If the patient has fallen down, do not attempt to raise him, should he be in the street he must gently be lifted by the head and feet into an ambulance and left on it till a doctor comes. No jolting should be permitted.

Do not give Stimulants and Smelling Salts and don't make him talk.

Remember that if left alone bleeding tends to cease of its own accord, therefore do not interfere.

Bleeding from the Lungs and Stomach are the two commonest varieties.

BLOOD FROM THE LUNGS

Comes up with *coughing*; is a bright red frothy fluid, and often mixed with saliva. It is often preceded by a tickling in the throat. Some bloody mucus is coughed up for some days after.

FROM THE STOMACH,

It is brought up by vomiting, after a feeling of nausea and weight and fulness in the pit of stomach. It is darker in colour, not frothy, may be mixed with food. It is usually partly clotted. Occasionally in large clots, usually in small clots, sometimes it looks like coffee grounds.

In a few days the motions look like tar, being very dark coloured from partly digested blood.

Treatment of Bleeding from the Lungs.—Keep the patient perfectly still on his back, in a cool, well-ventilated room. Do not let him do anything, even to help himself to drink. Avoid

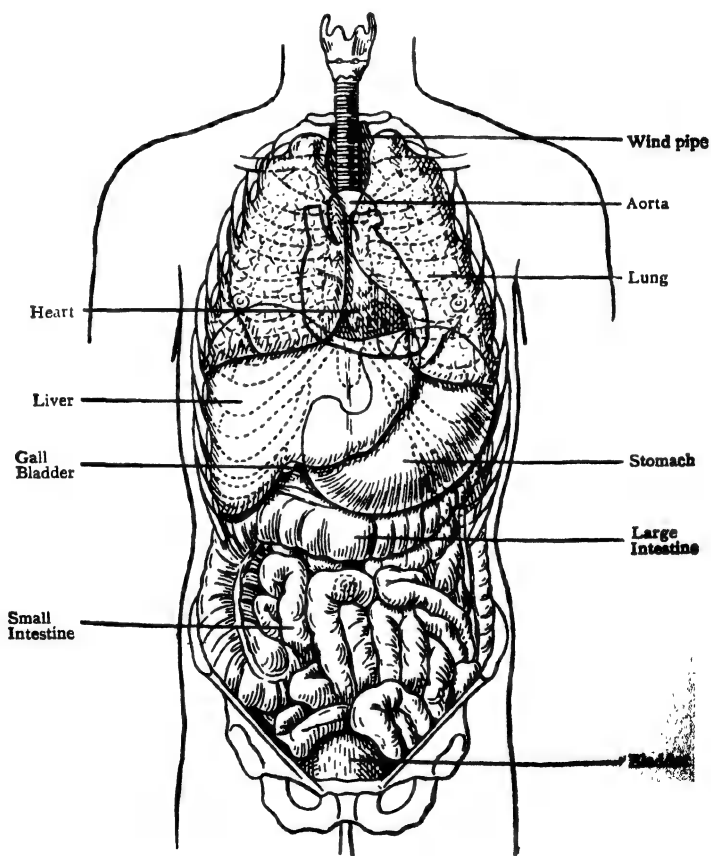
FRONT VIEW.

Fig. 46.

all excitement, send unnecessary people out of the room, be perfectly calm, else you will excite the patient.

Do not question him, as thereby you avoid the need of answers.

Give fluid diet, absolutely cold ; he may suck small quantities of ice, the smaller the amount the better. Ice so used does not do much good beyond relieving thirst. An ice bag (or Leiter's Tube, see page 54) may be placed on either side of the chest, with a piece of flannel intervening and frequently renewed, so as to absorb any moisture and prevent injury to the skin by the extreme cold.

Drugs are really of small value, but turpentine is always at hand, and five to fifteen drops (3 to 1 c.c.) according to age, in a little white of egg and water well shaken, may be given every half-hour for six doses.

Or half to two teaspoonfuls of table salt placed in small quantities on the tongue or mixed with half a wineglassful of water may be given occasionally.

In addition, a small dose of Castor Oil or Sulphate of Magnesia may be given, only the patient must not be unnecessarily disturbed when it acts on his bowels.

Bleeding in some cases of heart disease, is a safety valve to the over-taxed heart. In this case rest simply is required.

Treatment of Bleeding from the Stomach.—Exactly the same as for bleeding from the lungs. *Except* that no food is given by the mouth. A very little ice only, as it tends to cause vomiting if given freely. The ice bag is put over the pit of the stomach.

Food is given by the Rectum as *Nutrient Enemas*, which consist of 4 oz. (120 c.c.) of peptonised Beef Tea (page 162), or of 4 oz. (120 c.c.) of peptonised Milk with the yolk of an egg (page 162) every four hours.

In either case, if the loss of blood tends to destroy life, some iced brandy and water may be given in sips.

In men who have been heavy drinkers, or are fat and bloated, bleeding acts beneficially, and for such cases a purgative of Sulphate of Magnesia, one or two teaspoonfuls (4 to 8 gram.) dissolved in a tumbler of water, should be given every day after the bleeding.

Bleeding from the Nose comes midway between internal

and external hæmorrhage. It occurs in young girls and youths from nose picking, excitement, and other causes.

In older people from congestion of the Brain, Kidney and Liver diseases, Jaundice, Alcoholism.

Treatment.—Make the patient stand erect, with arms raised above the head, bathe the face, douching it with iced water, put a small ice bag on the bridge of the nose, and on the nape of the neck. *Gently* inhale through the bleeding nostril. *Do not* blow the nose. Cold to the nape of the neck, and a hot mustard and water foot bath may be tried. Occasionally firmly nipping the nostrils with finger and thumb stops the bleeding.

Blow some gallic acid up the nostril with a paper spill. In Alcoholics and men with “Livers” and those suffering from Kidney disease, a drop of Croton oil on sugar, or any brisk purgative, does most good.

EXTERNAL HÆMORRHAGE

May be of three varieties :—

1. Capillary or general oozing from the minute vessels.
2. Venous from the vessels conveying blood to the heart.
3. Arterial from the vessels conveying blood from the heart.

Capillary Bleeding is bleeding from the minutest vessels, there is no definite point or points from which you can say blood exudes. It simply soaks from the wound and becomes red immediately it appears.

Venous bleeding is *continuous* and not pumping, it “wells up” and issues from the side of the wound furthest from the heart, *except* in varicose veins, or when the veins are exceedingly numerous, when it bleeds from both ends and in a constant powerful stream which soon kills if unchecked.

The blood is dark in colour as it appears.

Arterial Bleeding is pumping, *i.e.*, it appears in jets. The blood is bright red, and comes from the side of the wound nearest the heart.

To Check Capillary Hæmorrhage.—Simple exposure to the air after washing away the blood clots is sufficient. But

should it persist run a little cold water over it, or soak a clean piece of linen in cold water and firmly press it over the wound, or a little linen soaked in diluted Elliman's, 1 in 3, will almost immediately stop it. If it is a deep wound plug it with linen strips soaked in Elliman's, diluted 1 in 3 of water.

Venous Hæmorrhage always stops by elevation of the part (*see* diagram 45). If this be impossible, apply a cold pad (made by soaking a piece of linen in cold water) over the wound and bandage firmly. If the bleeding be severe, a little Elliman's may be used on the linen pad, then a bandage applied for twenty-four hours. After which the pad must be taken off, and if the bleeding re-starts apply some more Elliman's and again bandage. Water as hot as the whole hand can bear is as useful as cold water.

Note.—Pressure over the wound will always stop bleeding, and one always has one's fingers to apply pressure with. Should there be two or three points bleeding, a bandage applied round the limb *beyond* the wound, *i.e.*, farthest from the heart, will stop venous bleeding *except in the case of Varicose Veins*, when a bandage must be applied *both sides* of the wound, *i.e.*, top and bottom.

Arterial Hæmorrhage can be treated by cold or very hot water, or by pressure with a pad and bandage, or by Elliman's dabbed on the wound or used as a compress.

If severe the vessel supplying the part must be compressed either by means of the hand and fingers, or by what is called a Tourniquet, until skilled assistance can be secured (*see* diagrams 48 to 52).

IN CASES OF BLEEDING

At once remove all clothing so as to see what variety of bleeding is going on.

Then tear off a piece of clean linen or handkerchief, make a pad of it, and apply it over the wound, *no matter what variety*, and press it firmly with the fingers. This stops the bleeding temporarily, even if a very large artery is cut; maintaining the pressure on the wound, now thoroughly clean the skin about it, using a clean new nail brush and soap and water, and lastly give it a good wash with pure Elliman's on a dossil of lint or linen.

Take off the pad and if the bleeding was capillary it will have

ceased. Now thoroughly wash the wound with Elliman's diluted, as you did the skin. Elliman's being an antiseptic will help to destroy the germs and being a styptic will check the bleeding which has probably re-started through the scrubbing.

Treat the wound as described under "Wounds" (pages 120-126).

If the *bleeding be venous* you may put on the protecting pad while you scrub up the surrounding skin. Elevate the part and then take off the pad. Now cleanse the wound and treat by applying a dossil of lint or linen soaked in diluted Elliman's, over which place a second piece of linen, or some oiled silk, and bandage. See "Wounds" (pages 120-126).



Fig. 48.

A method of stopping hæmorrhage from any part of the scalp and especially from the temporal region.

The bandage or strong tape must be about $1\frac{1}{2}$ inches wide, and in twisting the ends considerable force must be exercised.

If the Bleeding be Arterial but from small arteries, after scrubbing up, etc., as before, treat as for venous hæmorrhage (as above), using firm pressure on a pad.

If a very large Artery Bleed in a puncture, or a large surface wound be under treatment, apply a tourniquet or compress *above* the wound, elevate the part and thoroughly cleanse the skin and wound, always finishing up with pure Elliman's, while the doctor is being sent for.

Note.—That all forms of Hæmorrhage can be stopped by direct pressure on the bleeding point, do not neglect therefore to

apply such pressure, using if possible a clean piece of linen to prevent your fingers contaminating the wound.

For stopping hæmorrhage use pure Elliman's. For dressing



Fig. 49.

Compression (by fingers) of the Carotid artery.

the wounds use it diluted, two or three parts water according to the sensitiveness of the patient's skin and the severity of the wound.

WOUNDS.

Wounds may be—

1. Incised or clean cut, as with a knife, or by glass.



Fig. 50.

Compression (by fingers) of the Subclavian artery.

2. Lacerated or contused, in which the wound is due to some blunt instrument which tears or bruises the surrounding tissues, or to falls and such like injuries.
3. Punctured, when the wound is deep but narrow, as in stabs.
4. Gunshot.

INCISED WOUNDS.—If the instrument be clean, very little harm will result unless some important structure has been injured. The first thing to do is to stop *bleeding*. No matter what sized vessel may be cut pressure with the finger on the bleeding point will always suffice to stop hæmorrhage. But as the great object



Fig. 51.
Compression (by fingers) of the Brachial artery.

in treating wounds is to free them from dirt and germs of all kinds and to keep them clean, it is not desirable to handle the wounds without cleanliness of the hands, unless death is threatened.

Bleeding in this class of wounds is free, but exposure to the air and elevation of the limb usually suffice to stop general oozing. If an artery or vein be severed, and bleeding will not cease, then, after thoroughly cleansing the wound and surroundings, a pad soaked in some diluted Elliman's must be applied and kept bandaged over 24 hours.



Fig. 52.
Compression of the Femoral artery for arterial bleeding from the leg and thigh.

In Cleansing the Wound the removal of dirt is most important. Strong antiseptics will do more harm to the tissues than

good, so use plain boiled water or tap water containing a tablespoonful of Elliman's to the pint, and thoroughly wash the wound with clean pieces of linen soaked in the lotion ; use plenty of it.

Pick out visible pieces of dirt, etc. Then to dress the wound, soak a clean piece of linen in a mixture of one part of Elliman's to two of water, put it on the wound, cover with a dry piece of linen or oiled silk, and bandage it in place.

If the wound be foul do not attempt to close it, use hot fomentations (*see* page 89) to cleanse and remove the dirt. Then after a few days dress as above.

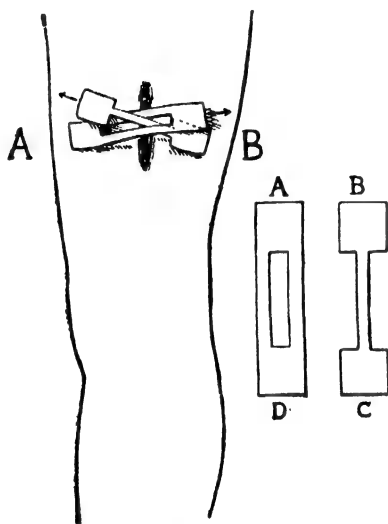


Fig. 53.

If there be gaping, the edges of the wound must be brought together, this may be done by the bandaging, but if there is *much* gaping a narrow piece of strapping or sticking plaster may be used *over* a small pad protecting the wound. Thus cut two pieces of sticking plaster as in diagram 53. Fasten A on one side of the wound and B the opposite side. Pass C through the slot in the opposite piece, and pull tight, then fasten down D and C.

Never attempt to close a scalp wound by strapping.

LACERATED WOUNDS cannot be closed so as to obtain

healing by first intention, as it is called. The edges are so injured that without great care they may die, *i.e.*, slough. Dirt has also probably been thoroughly ground into them; lock-jaw or Tetanus owes its origin to a special germ which develops in dirt, manure and earth; and so great care must be taken not to apply unnecessary pressure and also in washing the wound, etc., and to secure free drainage. Such wounds are recognised by the torn jagged edges, bruising and the cause of the wound.

Bleeding is usually slight or stops soon, because the vessels are torn and not clean cut. *Cleansing* must be thorough. A clean new nail brush and plenty of hot soap and water may be used. Then a thorough washing with some weak antiseptic such as Elliman's diluted, 1 part of Embrocation to 5 or 10 parts of water.

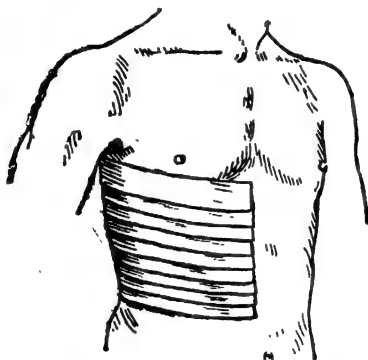


Fig. 54.

Strapping the side with sticking plaster for fractured rib, pleurodynia, etc.

Afterwards the wound is dressed as in incised wounds (page 120), but no strapping should be used. Free drainage for the fluids which exude will thus be secured.

If a large amount of flesh has been torn away from the limb and the wound is dirty, constant irrigation (*see* page 56) may be used to keep it clean, using diluted Elliman's or boracic lotion for the purpose. Or the limb may be immersed in a bath of hot boracic lotion, and this constantly renewed. Only a weak lotion may be used.

Healing will be gradual and a scar will result. When once the wound is clean and healthy the edges may be approximated

by bandage or strapping applied over the dressing (*see* diagram, page 122).

The dead or dying tissues will be cast off slowly by "ulceration," but this may be hastened by snipping off with clean, sharp scissors, remembering that in so doing bleeding may occur from severed vessels. The skin about the wound in all cases must also be thoroughly cleansed.

If a blood clot exist on a wound which has ceased to bleed and the wound appears to be clean, do not disturb or remove the blood clot as it forms an excellent covering.

PUNCTURED WOUNDS are the most dangerous, both immediately and at a later period. Immediately because large vessels may be cut or important organs injured, or the chest and abdominal cavities perforated. Later, because it is impossible to cleanse them thoroughly and foreign substances may be carried in, or germs of a dangerous nature introduced into the deep parts which excite severe inflammation or blood poisoning because free drainage cannot be secured. The orifice may even heal and an abscess form in the deep parts.

Hæmorrhage may be very severe, but can be controlled by compressing the artery above the wound (diagrams 48 to 52), or by a pad and bandage firmly applied over the orifice of the wound. Certain forms of injury to large arteries will not heal or close of themselves, and bleeding will be renewed on removing the bandage. If the wound be near a large artery and the bleeding is great, a tourniquet must be applied and a doctor sent for.

To clean the wound, the orifice must be widely separated and some diluted Elliman's thoroughly syringed into the wound ; any foreign substance must be removed.

Then a little linen soaked in diluted Elliman's must be gently pushed into the orifice to prevent it closing, and so secure drainage. This is renewed every day for three days, at the end of which time all danger will have ceased, or definite signs of inflammation or abscess formation will have developed, when hot fomentation must be applied, to aid the discharge of the pus.

If the chest or abdomen be injured keep the patient absolutely

quiet, cover the wound with a pad of linen soaked in diluted Elliman's and send for the doctor.

GUNSHOT WOUNDS

Are too varied for treatment to be compressed into a few words. But taking fowling-pieces and small shot as the cause of injury such wounds are nearly always lacerated or contused.

If discharged within a few feet of the patient great contusion and blackening of the skin by the concussion and powder result.

Pieces of clothing, wads, etc., may be carried into the wound, and although only small orifices probably exist, great damage may have been done to the tissues, under the skin, even when the firearm was discharged at some distance.

In themselves bullets and therefore bullet wounds are aseptic, *i.e.*, surgically clean. It is dirt or fragments of clothing which makes them inflame and "go wrong." Do not attempt to close the wound by strapping, in case it contains foreign matter besides the bullet, and an abscess results some time later.

Treatment.—See if any part of the clothing is missing, then remove the clothes so as to get at the wound. Thoroughly cleanse the surrounding skin, remove any shot or pieces of bullets, or clothing and other foreign substance. Now cleanse the wound. If it is punctured open the lips of the wound, and pour in some Elliman's diluted 1 to 3 of water, and endeavour to swab out the wound with pieces of lint.

Do not attempt the removal of bullets deeply situated, you will probably do more harm than good.

Now soak a strip of linen in the pure Elliman's and gently push it into the wound or wounds, and treat as punctured wound or lacerated wound according to condition.

Treat the hæmorrhage by a pad and pressure or by tourniquet (*see* Hæmorrhage, page 119).

If the bleeding be severe keep on the tourniquet, cleanse the surrounding skin and the wound, and send for assistance.

In the wounds of high velocity guns, cleanse the surrounding skin and put on the wound a pad soaked in Elliman's, and bandage. These usually heal in a very short time like clean cut incised wounds.

Gun Kicking causes considerable bruising and contusion of the shoulder, with pain and stiffness on movement. If the part be thoroughly bathed with warm water and then gently massaged with Elliman's five to ten minutes after the day's sport, stroking and friction being used (*see* Massage, page 13), shooting without discomfort may be resumed the next day.

POISONED WOUNDS, LYMPHANGITIS

Is due to dirt in wounds, neglect, or the presence of some micro-organisms which cause inflammation, and lead to spread of inflammation along the lymphatics.

Signs and Symptoms.—The wound becomes painful and inflamed, leading from it may be seen red streaks, which can be felt like cords under the skin ; these are tender and hot. The part feels stiff and all movements produce pain. The streaks end in lymph glands in the armpit, groin, etc. Often the original wound may be a mere scratch, but this becomes tender and painful as the symptoms develop.

There is always fever and indisposition even in the mildest forms.

Treatment.—First treat the wound by scrubbing thoroughly, then by constant irrigation, or immersion in a hot bath for hours at a time. During the time the part is not in the bath the wound must be dressed with the diluted Elliman's.

For the Lymphatics : smear the red streaks with Glycerine of Belladonna, and apply hot fomentations frequently.

Subacetate of lead lotion (page 216) applied hot on linen, frequently renewed, is very soothing. Give a slight purge and limit the diet. An abscess may form at one or more points, if so, treat by hot antiseptic fomentations (*see* page 89), to encourage pointing and discharge of their contents.

Inflammation of the Lymph Glands is due to the same causes as above and usually accompanies Lymphangitis. The glands in the groin, armpit, and neck are those most commonly inflamed. Look for sores or wounds about the feet and hands, look for bad teeth, or nits in the head and treat these.

The glands are swollen, tender, and may be red and hot. An abscess may form.

Treat by smearing the part with Glycerine of Belladonna or apply lead lotion (page 216) or fomentations (page 87). Always secure rest by discontinuing work, keeping the arm in a sling, or resting the foot and leg on a pillow, etc.

After these forms of inflammation, chronic œdema (*i.e.*, swelling of the part) often follows, which must be treated by elevation, firm bandaging and systematic massage with Elliman's (*see* Varicose Veins, page 103).

IN POISONING by snake bites, rabid dogs, etc., at once tie one or more pieces of string *as tightly as possible above the wound, i.e.*, between it and the heart. Then suck the wound or burn it thoroughly with a red hot piece of wire, or cut it out with a knife.

Bathe the part with hot water and encourage bleeding. Do not remove the string until all this has been thoroughly done.

If faintness occur, give stimulants in the form of Brandy, Whisky, etc., or Eau-de-Cologne and Sal Volatile. Large doses of Strychnine injected Hypodermically is said to be of great service. Vigorous treatment is necessary to save life.

Constant immersion of the bitten part in the hot bath (*see* page 111) without removing the ligature, is the best treatment after the above has been carried out.

The injection of Anti-Venine serum is the only reliable cure for snake-bite, which, however, must be done immediately to be of service.

DISLOCATIONS.

Dislocations due to injury are most common in early adult life and middle age. They are really such severe sprains, that great tearing of the capsule and ligaments occur, allowing the bones to become displaced. One or other extremity of the bone often escapes through the tear in the capsule.

Other forms are birth dislocations, and those due to diseases of the Joints.

(Continued on page 129.)

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The causes are innumerable, but two classes exist :

1. Those due to ordinary violence and
2. Those due to muscular violence, such as excessive yawning, producing dislocation of the jaw.

The signs of the former class are—

1. The signs of a synovitis (see page 51) with greater bruising and discoloration.
2. Inability of either the patient or another person to move the limb, *i.e.*, not only on account of pain produced by the effort, but absolute mechanical impossibility.
3. Some peculiar change in the shape of the limb.



Fig. 55.

Showing the open mouth and deformity of dislocation of the jaw.
The mouth cannot be closed.

In the *latter class of dislocation*, the first sign may be absent.

The *signs* are given so as to enable a lay person to avoid the mistake of treating a case as one of sprain, *which can be cured in time*, for a dislocation which *cannot ever really be cured*, unless specially reduced.

The after treatment is exactly like that of sprain, and depends chiefly upon massage with Elliman's, etc. (See pages 13 and 41.)

Only certain dislocations can be treated by unskilled persons.

Always examine and compare the opposite joint, *i.e.*, compare the injured and healthy parts.

DISLOCATION OF THE JAW

May occur on one or both sides, and is due to yawning, trying to take too large a bite, excessive laughter, extraction of teeth, blows on the chin as in falling, etc.

Signs.—An open mouth which cannot be closed, dribbling of saliva, inability to talk, hollowed cheeks with a swelling between the ear and eye, which is not present except in dislocations.

Treatment.—Make the patient sit down, then stand facing him, and wrap your thumbs with the corner of a towel, now place the protected *thumbs* on the lower back teeth, and twist the *fingers* forwards under the chin. Then press firmly with the thumbs, and at the same time lever the chin upwards and forwards with the fingers. A sudden snap occurs when reduction is effected, and if the thumbs are not protected a severe bite results. Now put on a four-tailed bandage (*see* diagram 66, page 141) which must be worn for a week. The patient must not have solid food for a week, and should be fed on fluids by means of a “boat.” Talking and yawning will often bring back the condition, even though originally due to violence.

DISLOCATION OF THE OUTER END OF THE COLLAR BONE

Is due to falls on the shoulder, especially at football and such games.

Treat by putting a soft roll of flannel in the arm-pit, and pushing up the arm, while maintaining pressure over the collar bone, the arm is then bandaged to the side by a triangular bandage.

Then put a pad of cotton wool over the swelling, and keep it in its place with a strap passing under the opposite arm-pit, or round the bent fore-arm, which is kept in a sling, on the injured side.

Prevent inflammation, and treat the stiffness as usual in sprains (pages 41-49).

DISLOCATION OF THE INNER END OF THE COLLAR BONE.

Cause.—Falls upon the shoulder or out-stretched arm.

A swelling which is obviously the collar bone, is found on one

side of the upper end of the breast bone. A truss similar to that worn for rupture, or a strap over a pad of cotton wool or flannel, can be employed to keep it in its place. The fore-arm must be put in a sling for three or four weeks at least.

DISLOCATION OF THE SHOULDER.

Causes.—Sudden falls on the out-stretched hand, or on to the elbow. This dislocation is commonest forwards, and is known by the three great signs. (Pages 127-129.)

The *Deformity* is such that the elbow is held away from the side, and pointing a little backwards or forwards. There is a marked hollow under the tip of the shoulder.

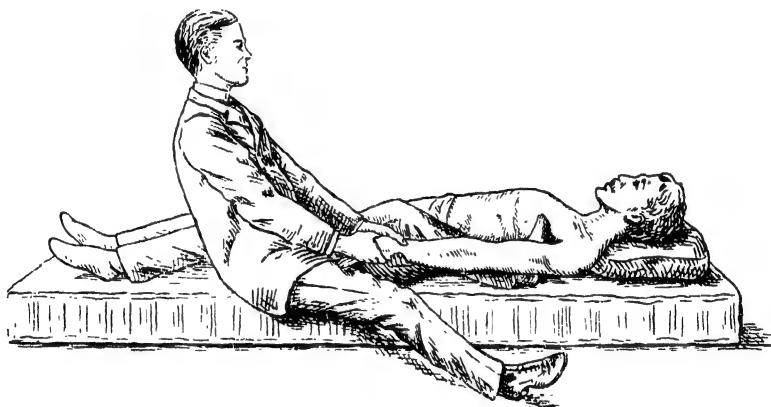


Fig. 56.

The method of reducing dislocation of the shoulder by the heel in the armpit.

If the girth of the two shoulders be measured by a tape, that of the injured side will be from 1 inch to 2 inches greater than the sound shoulder.

Treatment.—The only method of reduction is to place the patient with chest and arms bare, flat on the back on a mattress. Now take off your boot, if the right shoulder is dislocated, the right boot must be removed and vice versa. Sit on the mattress, on the side injured, facing the patient. Place your heel in the armpit. Grasp the wrist and fore-arm firmly and pull towards you, first pulling the arm in a direction somewhat *away* from the

side, and while continuing to pull, bring it *towards* the side, pushing the upper end of the arm bone out of the arm-pit with the heel at the same time. In fact, you use the heel as a fulcrum, and the patient's arm as a lever.

A click may be heard and a sense of relief experienced by the patient when reduction has occurred.

Bandage the upper arm to the side, and place the fore-arm in a sling, using two triangular bandages to do so. The sling must be worn for one month. After 10 days, use massage with Elliman's, douching and gentle movement as in *Prevention of Adhesions* (page 49), once daily. Full use of the arm is not permissible for six weeks.



Fig. 57.

SELF HELP.—A novel method of reducing a shoulder dislocation. The upper bar replaces the heel in the arm-pit, the extension power is supplied by traction on the fourth bar. (See previous diagram.)

DISLOCATION OF THE ELBOW.

Many varieties occur. One or both bones of the fore-arm may be dislocated, either backwards or forwards.

The commonest is like the condition called Pulled Elbow (*see* page 60). In dislocation in addition there is a swelling on the front of the elbow on its outer side.

Treatment.—Bend the elbow at right angles. Pull at the wrist with one hand and press back the swelling on front of the elbow with the thumb of the other. The arm of the patient may be passed under the arm or back rail of a chair while you pull at the wrist, unless a third person is available to hold the upper arm while you pull. Do not let go, but at once put a pad where the

swelling in front of the elbow existed, and bandage it firmly. Keep the arm bent a little more than at right angles, and put it in

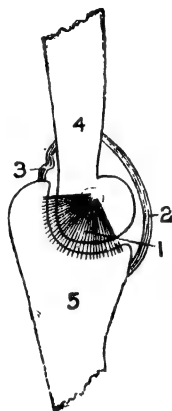


Fig. 58.

THE STRAIGHT ELBOW.—Showing the hinge-like arrangement of the joint and its fixation by the ligaments and capsule. In dislocation forwards or backwards these ligaments are seriously torn.

1. Lateral Ligament.
2. Anterior Ligament tightened in this position.
3. Posterior Ligament relaxed in this position.
4. Humerus.
5. Ulna.

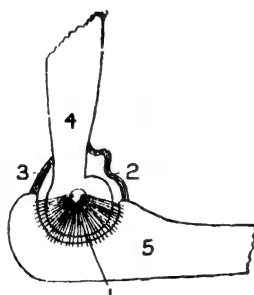


Fig. 59.

THE BENT ELBOW.—In dislocation forwards of the Ulna the Humerus (4) lies entirely behind the Ulna(s), but in dislocation backwards 4 lies on the front of Ulna just above the figure 5.

1. Lateral Ligament.
2. Anterior Ligament relaxed.
3. Posterior Ligament tightened
4. Humerus.
5. Ulna.

a sling for a month. Then use massage with Elliman's, douching movement, etc., for the stiffness (page 41).

Other forms of dislocation are reduced thus :—

Sit patient on a chair. Stand at his side. Put your foot, corresponding to the side of injury, on the seat of the chair. Put your knee in the hollow of the elbow.

Grasp the patient's wrist, and pull the fore-arm towards you, so bending the elbow more while you push with your knee against the lower part of the Humerus (*see* Skeleton, page 6), making the arm a lever and your knee the fulcrum. A click and sense of relief shows success. Keep the fore-arm in a sling for a month. A cold water treatment reduces the inflammation. After 10 days, begin massage, etc. (pages 40 and 49).

DISLOCATION OF WRIST MAY BE BACKWARDS OR FORWARDS.

Warning.—This injury may be mistaken for a fracture of the Radius low down, with driving of the upper into the lower end of the bone. It is distinguished by the fact that the dislocation is reduced more easily than fracture of *this* variety, and the deformity does not return when you let go as it does in fracture. Swelling on back of wrist is *very* marked in dislocation, only slight in fracture.

Treatment.—Bend the patient's elbow to a right angle, grasp the hand as in handshaking, put your other hand against the patient's upper arm, pull the hand and push the arm away as if you were trying to pull the hand off. There will be no doubt about reduction when effected. Then apply a straight piece of wood as a splint to the front and back of the arm. A good method is to fold up a newspaper into a convenient breadth. Bandage with strips of linen handkerchiefs, or triangular bandages. Keep in the splints for ten days, then treat once a day by massage with Elliman's (pages 13 and 49) for another fortnight, taking off the splints to do so and replacing them; remove the splints entirely at the end of this period, but continue massage till all stiffness disappears.

DISLOCATION OF THUMB BACKWARDS.—Due to sudden forcing of the thumb backwards.

To reduce.—Hold the wrist firmly with the left hand. Now grasp the thumb with the fingers of the right hand, pushing the pulp of your thumb against the back of patient's thumb as in gripping a piece of wood to break it in two at some definite point, press the patient's thumb backwards as if dislocating further, then

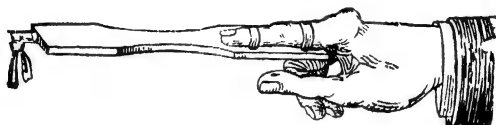


Fig. 60.

Showing how to make and use the apparatus most useful in reducing this dislocation, traction is made on the piece of wood while the patient's wrist is held firmly.

See Clove Hitch next diagram. Should it be impossible to make the above apparatus apply a clove hitch to the finger, using a strong piece of tape or thick string, to pull.

pull, and while pulling bring the thumb straight. The thumb must then be covered with cotton wool and bandaged for a fortnight.

DISLOCATION OF THE FINGERS is easily reduced by pulling and manipulating the swelling. (*See diagram 60.*)

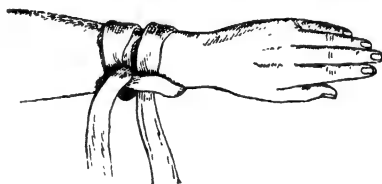


Fig. 61.

THE CLOVE HITCH.—This is the method of applying a narrow bandage (*See page 44*) to any of the limbs so as to gain a good hold for pulling, say in helping to reduce a dislocation.

DISLOCATION OF THE HIP.

Several varieties occur. They are due to great violence, such as a person falling on his knees when carrying a heavy bale, or while kneeling, some heavy weight falls on his back, or he falls with his legs widely separated, as in "doing the splits." The commonest variety results in a peculiar deformity in which when the person stands, the knee is a little bent, the toe turns inwards

and rests upon the opposite instep. The patient cannot separate the injured leg apart from the sound one.

To Reduce.—Place the patient flat on his back on the floor. Bend the knee to a right angle, and the hip at right angles to the body. Now straddle the leg (shin part) facing the injured person's face, place both arms under the patient's bent knee, and grasp your

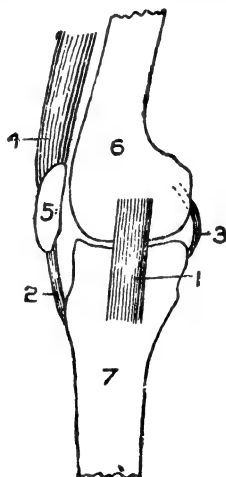


Fig. 62.

THE KNEE JOINT FROM THE SIDE.—The knee-cap is suspended between the muscle above the ligament below, which allows of side movement when the knee is a little bent. In dislocation the normal amount of side movement is exceeded and the bone wedges.

Stretching between and bridging over the intervals between the various ligaments forming a more or less continuous layer is the capsule of the joint.

1. Lateral Ligament.
2. Patellar Ligament.
3. Posterior Ligament.
4. Thigh Muscle (Quadriceps).
5. Knee Cap.
6. Femur.
7. Tibia.

elbows. Now pull upwards with your arms, but prevent the patient's knee straightening by half sitting on the foot and ankle. Absolute rest in splints is necessary for four or five weeks, then the usual massage treatment for sprains, etc. (pages 13 and 49).

DISLOCATION OF THE KNEE-CAP IS NOT UNCOMMON.—It may be due to blows on the knee, or to sudden

contraction of the thigh muscles to save the person falling, more particularly in knock-kneed individuals, or when the knee is half bent.

The knee is flattened in front and looks broader than the other. It is slightly bent, and the muscles on the front of the thigh are tense. The knee-cap can be felt out of place and lying too far out. Instead of lying flat with its surfaces in front and behind, it is turned with one edge lying a little forwards.

Treatment.—Lay the patient down, raise the leg and foot, resting the latter on your shoulder, put your fingers on the front edge and press it towards the proper situation, *i.e.*, manipulate the knee-cap into position. Then rest for two weeks with the leg quite straight on a back-splint (page 69), or lying on pillows.

DISLOCATIONS OF THE KNEE ARE USUALLY PARTIAL.—They are due to falls from a great height, or jumping from a train or carriage in motion.

The knee is deformed and slightly bent. There may be a swelling behind, at either side, or in front of the knee, according to the variety of dislocation. Compare the sound knee.

Treatment.—Make patient lie down, bend his hip and knee at right angles, and then pull at the ankle, twisting the leg in and out a little, and manipulating the bone into place, while an assistant grasps the thigh. Treat with absolute rest or fixation on splints for six weeks. Begin massage with Elliman's and movements (pages 13 and 49), after 14 days, at first very carefully taking off the splint to do so, and then replacing it.

DISLOCATIONS AT THE ANKLE are due to falls from a height or jumping from moving vehicle, or sudden twists. Often they are accompanied by a fracture.

To Reduce.—Lay the patient flat on back, bend the hip and knee, then pull at the foot, one hand holding the heel, the other hand the front of the foot, and gently move from side to side, *i.e.*, pull and wriggle the foot into position. Keep the foot at rest for two weeks, then begin massage and movements (pages 13 and 49). In all dislocations of the knee and ankle an assistant is absolutely necessary to hold the thigh and counteract you when pulling.

FRACTURES.

Fractures may be—

1. Simple.
2. Compound.

A Simple Fracture is one in which only the bone is broken, and there is no wound leading to it.

A Compound Fracture is one in which a wound of the skin exists, and air communicates directly with the broken bone.

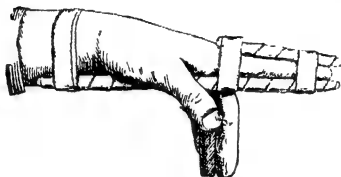


Fig. 63.

Showing a simple fracture of the finger put up on splints. The anterior splint extends as far as the wrist, the posterior is short.

A simple fracture may be made compound by unskilful handling, by unwise attempts to use the limb at the time of injury, and also by putting on bandages and splints so tightly that they cause death of the tissues over the fracture, and so expose it to the air, when the dead tissue comes away by "sloughing."

ALL FRACTURES GIVE RISE TO CERTAIN DEFINITE SIGNS.

These signs are not all to be made out in every fracture.

1. A **snap** can be felt or heard at the time a certain injury is received.
2. Soon some **bruising, discoloration** and **swelling** appear, the part is **painful** and **tender**, and no matter what movement is performed or attempted by the attendant the pain always appears at the same spot. This tends to distinguish it from a bruise, in which case, only when the injured muscle is brought into use by the patient himself is any pain felt, all other movements by the attendant being painless.

3. **The person cannot use the limb.**—Thus, if the thigh bone at the hip joint is fractured, he cannot raise his leg and foot off the couch or floor. If the leg be fractured he cannot bend and straighten his ankle, nor turn the foot in and out. If the armbone be fractured he cannot bend and straighten the elbow. If the fore-arm and wrist be fractured he cannot turn his hand to show the palm and back alternately. If the collar bone be fractured he cannot raise his hand to the back of his head or put it on the opposite shoulder across his chest.

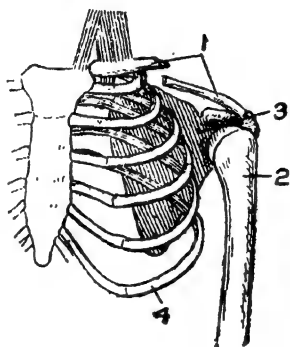


Fig. 64.

Showing fracture of the collar bone. The internal piece practically retains its normal position, but the weight of the arm causes the outer piece to sink downwards and so the shoulder appears dropped.

1. The two parts of the fractured Clavicle.
2. Humerus.
3. Scapula or Shoulder blade.
4. Ribs.

4. **Unusual Degree of Movement at the Site of Injury.**—If, however, another person takes hold of the injured limb above and below the injury, *i.e.*, fracture, he can often move it about from side to side, or forwards and backwards as it were, thus bending the limb at a place where such is impossible when the bone is sound. Of course the pain produced is so great that he cannot test the movement very freely, and it is not desirable he should do so. (See diagram 65.)

5. **Crepitus.**—If a hand be placed over the fracture when the limb is moved from side to side a harsh grating sensation is felt, due to the rubbing together of the two fractured ends of the bone, this *Crepitus* is the most distinctive sign of fracture.

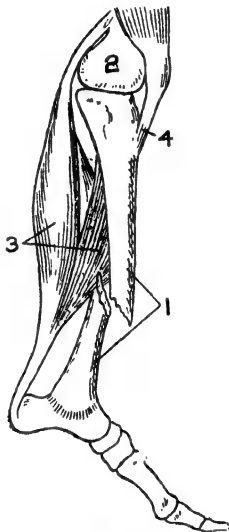


Fig. 65.

Showing fracture of leg frequently compound. It is obvious that an excessive degree of movement of the lower part of leg and of the foot could be obtained by the attendant.

As this bone is covered only by skin it is often compound, and if at first simple any roughness in manipulation easily causes the bone to protrude through the skin, a condition which greatly increases the gravity of the injury.

1. Fractured Tibia.
2. Femur.
3. Calf muscles.
4. Patellar ligament.

6. **Deformity**, *i.e.*, loss of shape of the limb or part, is also present in all fractures. One limb may be shorter than the other, or bent, or the foot is rolled markedly outwards on to its outer border and cannot be turned inwards. The arm hangs helpless at the side, or the hand is turned with the palm looking downwards and cannot be moved. The mouth in fracture of the jaw may be partly open and the patient dribbling, and so on.

Treatment by First Aid is directed simply to fix the limb so that no movement can occur between the broken ends. This is done by splints which can be made from any stiff material.



Fig. 66.

The four tailed bandage as applied in a case of fractured lower jaw. It is made by taking a yard of calico 3 inches broad, tearing its two ends down the centre, but leaving the middle 8 inches untornd. In the very middle a small slit 2 inches long is made for the point of the chin.

They should, if possible, be broader than the diameter of the limb, and should be long enough to pass beyond the joints above and below the fracture.



Fig. 67.

Showing a method of fixing the leg by means of internal and external splints, but the splints here shown are too narrow and do not extend high enough above the knee.

They are retained in place by means of bandages, handkerchiefs or strips of any soft material.

For the arm, brown paper or newspapers folded up form excellent splints. For the leg, cardboard, broom handles, umbrellas, or tying both limbs together act admirably.

A splint should be put on both inner and outer sides of the limb. For the leg the best position is with the knee straight. For the arm with the elbow bent at right angles, and the fore-arm suspended in a sling.

If there is a wound as well, or the fracture be compound, first immediately apply a pad soaked in Elliman's over the wound and then secondly, put on the splints to prevent movement while you now thoroughly treat the wound.

All clothing should be cut off, unnecessary movement may make a simple wound compound, and so increase its gravity tenfold (*see* diagram 65). If surgical aid be within reach simply apply the pad and put on the splint, do not cleanse the wound.

It is in the after treatment that Elliman's is so beneficial when stiffness and swelling persist. (*See* Massage, page 13, and Sprains, pages 41-50).

A thorough douching followed by massage with Elliman's twice a day will soon make the part supple, unless there be adhesions (*see* page 49) present in the adjacent joints. These should be broken down (by a doctor) by forcibly moving the joints, and then by applying massage and gentle movements to prevent their re-formation (page 49). But adhesions amongst the muscles and tendons can be treated successfully by free movement and plentiful and vigorous rubbing and kneading with Elliman's without any special surgical assistance.

CORNS.

After soaking the feet in warm water shave the corn with a clean knife, or remove by scraping as much as possible of the hardened skin. Then wear a plaster to diffuse the pressure which caused the corn.

In chronic corns after treating as above, apply the following application every night by means of a wooden match stick, removing the dead skin before application each time—

Salicylic Acid	-	-	-	-	-	6 parts.
Acetic Acid	-	-	-	-	-	1 part.
Extract of Indian Hemp	-	-	-	-	-	1 "
Flexible Collodion	-	-	-	-	-	46 parts.

Then attend to the shape and fit of the boots, and wear a piece of lead plaster with a hole cut in it over the site of the corn.

Rubbing with Elliman's eases the pain.

SWEATING FEET.

A condition which leads to tenderness on walking, blisters, and often very severe eczema of the feet. It is most common in hot weather.

Treatment.—Change the socks or stockings daily. A good plan is to wear a pair alternate days for a week. Never wear cotton or silk socks, but always woollen and not too thick. Every night bathe the feet for 10 to 20 minutes in cold water containing a teaspoonful of powdered alum to the pint, then dry; special attention being paid to the toes and interspaces. In the morning dry the feet and toes carefully again, and then dust the socks or stockings and between the toes, with the following—

Dusting Powder.

Equal parts of Powdered Boracic acid.

" " Alum.

" " Starch.

If the feet are blistered, thoroughly cleanse the part about the blister, then with a needle purified by holding in a gas flame prick and slightly tear its base, and with a piece of linen gently squeeze out the fluid. Do not remove the piece of skin if the blister contains quite clear fluid.

Then dust some dusting powder, as above, over the blister and cover with a dry piece of linen. Do not let the sock stick to the blister.

Others prefer to spread a little zinc or boracic ointment on a piece of linen, to be placed over the blister.

If a blister be neglected (often minute blisters, the size of pin heads form between the toes, and are neglected) and becomes foul, intense inflammation is set up.

This condition should be treated by washing first with warm oatmeal water. Then apply lead and glycerine lotion (page 216) on pieces of lint wrapped round the toes, and wherever necessary.

If the patient has to be about, he should bathe the feet with boracic lotion or Elliman's, one teaspoonful to a pint of tepid water, twice a day, dry them carefully, and then thoroughly dust everywhere, especially between the toes, with the powder (*see* page 143), and then separate the toes with dry pieces of linen wrapped round them.

In a short time he so far recovers as to be able to use the dusting powder alone.

When the feet are sore from walking, wash the feet in warm or cold water to which add a teaspoonful or more of Elliman's.

JIGGER OR SAND FLEA

Is a tropical pest, and causes ulceration about the nails, toes and feet (and elsewhere at times).

The female insect burrows into the skin and causes pea-like elevations which become little abscesses from which eventually the jigger is discharged, but sores are left which go on festering for indefinite periods.

Treatment.—Prevention. Sweep the floors frequently, sprinkle them with carbolic or insect powder. Do not walk bare-footed. Wash the feet daily if a general bath be not available. Remove any jiggers which have stuck to the skin.

Prick the little elevations, and thoroughly dab with Elliman's.

It is best to try and turn out the insect from its burrow with a sharp needle, then dress the part with Elliman's till it is quite well.

DROWNING, ARTIFICIAL RESPIRATION.

In drowning, water is sucked into the lungs and stomach, and it is essential for the restoration of breathing that this be removed, at least from the lungs, before attempts at artificial respiration be carried out.

Of all methods of artificial respiration, Howard's can be carried out with the greatest vigour even on the biggest individuals.

The first thing to do is to empty the Lungs.—Rapidly strip the individual, roll up the clothes into a bolster. Turn the patient on to his face with the bolster under the pit of his stomach.

(Continued on page 146.)

ADVERTISEMENT.

St. John Ambulance Association

Being the Ambulance Department of

**The Grand Priory of the Order of the
Hospital of St. John of Jerusalem in England.**

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THE ASSOCIATION was founded in 1877 by the Order of St. John of Jerusalem in England, and amongst its objects are the instruction of persons in "First Aid to the Injured," Home Nursing and Home Hygiene, also the transport of the Sick and Injured.

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Bend one arm so that his forehead rests on his fore-arm and so keeps his mouth off the ground, while still making it the most dependent part.

Now forcibly compress the back with your whole weight, just below the shoulder blades, for three or four seconds, suddenly



Fig. 68.

Howard's method of artificial respiration emptying the stomach and lungs of water. Note the position of the bolster, and the forehead lying on the bent fore-arm so raising the mouth from the ground.

relax and repeat two or three times. This removes the fluid from the mouth. (Of course gravel, seaweed or anything contained in the mouth has been removed.)

Now turn the patient rapidly on to his back, placing the bolster just below his shoulder blades, his head hanging as low as



Fig. 69.

The second position in Howard's method *Compressing the Chest*. In this case, there being no assistant, the bent fore-arms are placed under the patient's head, but this is not so effective as if they were fully extended and kept so by an assistant.

possible. Cross his arms above his head so as to extend the chest, and let an assistant hold them to the ground. Next with the corner of a dry handkerchief take hold of and pull his tongue into the corner of his mouth and let some one hold it there, unless

you have an indiarubber band which can be passed round the tongue and jaw to fix it.

Stand astride the patient's hips, facing his head. If the patient be a child or feeble and old, you may kneel. Place your thumb on either side, just under the margin of his chest, so that the outstretched fingers will fit into the rib spaces.

Bring your elbows against your side, so as to have the weight of the body pressing against the patient's chest through your fore-arms, and slowly lower yourself forwards by bending your knees, until your face is close to the face of the patient.

Your whole weight is borne by and compresses the patient's chest during the time you count one, two, three slowly, then suddenly give a final push and spring back into the erect position.

Remain standing while you count four, then repeat the previous manœuvre. This is done until breathing is natural and regular. When the patient attempts to breathe, push only when he expires, *i.e.*, breathes out, else you will impede rather than aid respiration. After quarter-of-an-hour, if result not successful, try again in the first (prone) position, for 10 to 15 minutes. This attitude is probably the most generally useful, and may be persevered with from the first.

After an hour's unsuccessful work hope may usually be given up.

All this time his limbs should be rubbed thoroughly, then wrapped in warm blankets, and if possible hot water bottles should be placed about his body and legs. As soon as a few breaths are taken naturally, place a teaspoonful of weak brandy and water at the back of his tongue.

Warm drinks such as hot tea, coffee, or milk are given when swallowing is possible, and he is placed in a warm bed where for a few days he should remain, to prevent ill effects from the immersion.

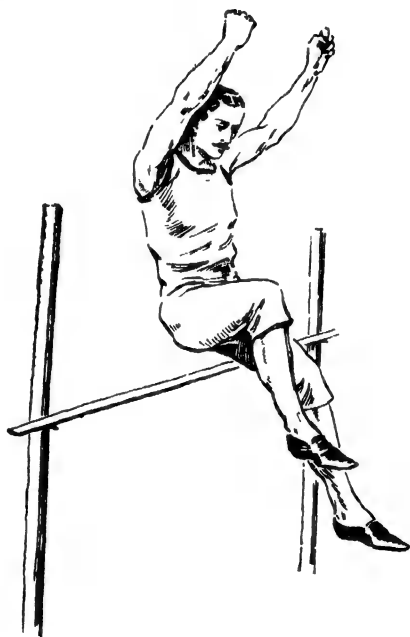
Children may be put in a warm bath as soon as they begin to breathe, to combat the shock and restore warmth.

Howard's Method is applicable whatever the cause of cessation of respiration. The force must be graduated in the case of children and females whose ribs cannot sustain great weight.

Another Aid to Respiration easily carried out is to pull the tongue well forward, then let it fall back, alternately, about fifteen times a minute. This may be done in conjunction with Howard's method, pulling the tongue forward during inspiration.

THE GENERAL HYGIENE OF THE ATHLETE.

At the very earliest opportunity let it be understood that too much importance has been attached to special diet, to definite quantities, and so on, as an essential feature of training.



Training aims at attaining the acme of health and muscular vigour, and to acquire such perfection every function of the body must be supervised and regulated. In other words, *Diet, Habit of Life and Graduated exercise* are the three essential principles to work on.

The less the departure from a healthy ordinary mode of living the better, with certain definite restrictions: attend to the

restrictions and the athlete may enjoy life, and his training be a period of happiness, instead as is so often the case, one of discomfort and misery.

A word or two of warning. As the digestive functions are those upon the perfect working of which the athlete will have to depend most for his stamina, no person should go in for training unless his teeth are in perfect order.

Thorough mastication is a necessity for good digestion. Also every form of heart disease while often benefiting from a specially arranged set of exercises, is a distinct bar to strict training. Wind or staying power depends almost entirely upon a good sound heart, hence it is obvious that good wind cannot be obtained if the heart is not sound.

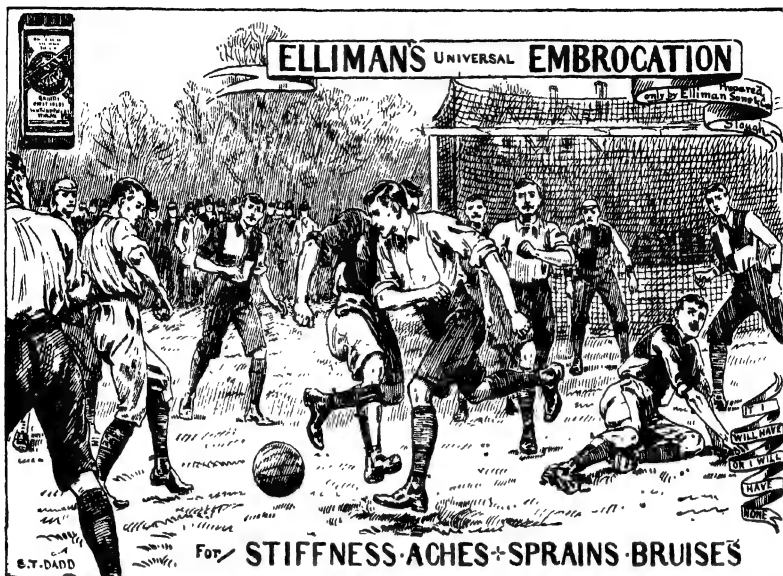
Obesity and the tendency to put on weight is a thing that occasionally tries the athlete. Usually it is due to imperfect dieting and luxurious living, but careful avoidance of farinaceous foods, sugar, and the strictest possible abstention from fluids of all kinds, with daily purgative of a saline nature, and a few Turkish baths will soon enable him to reduce his weight.

Few people appreciate how fluids of all kinds fatten. A fat man is a water-logged man, and drinking, after all, is largely a matter of habit, and the first and greatest restriction put on the athlete is the form and quantity of his drink.

Alcohol.—From the experience of numerous careful athletes, and from observations of a scientific nature, alcohol except in the minutest quantities is acknowledged to be injurious, therefore the quantity which can be taken without harm being so small, and as indulgence in the desire entails a thirst for more, all spirits and wines must be avoided.

A time honoured exception is the mid-day pint of ale, which by its bitterness acts as a stimulant to digestion and improves the appetite, and contains a relatively small amount of alcohol. The custom of drinking during meals is in itself injurious, and the amount consumed should be restricted to a pint towards the end of the dinner, less if possible.

Tobacco is to be rigidly discarded, nothing affects the heart so rapidly and so determinedly as tobacco. It causes palpitation,

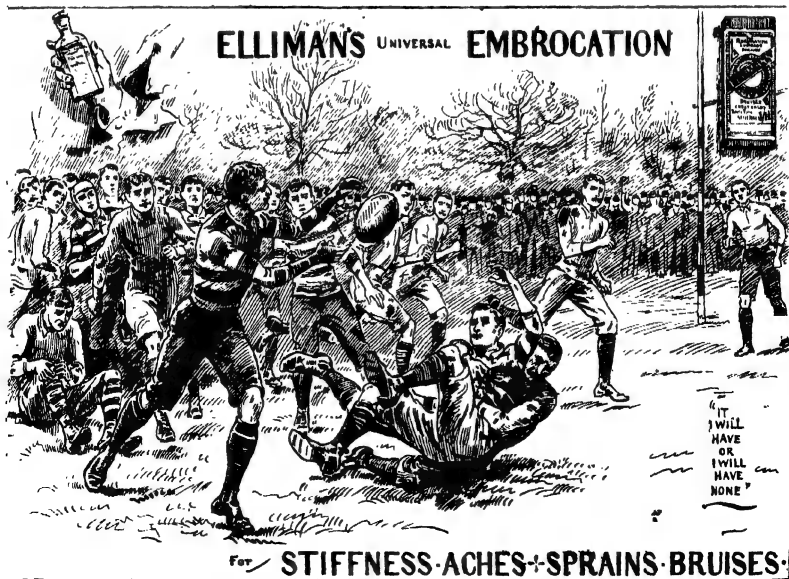


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IT WILL HAVE OR I WILL HAVE NONE

pain and oppression and fatty changes in the heart. Its effect upon the mouth and digestion also, is injurious. It tends to create thirst, one of the greatest trials some athletes have to contend against. Therefore no tobacco.

Some famous athletes have smoked a pipe or cigarette after dinner but, generally speaking, it is best avoided.

Feeding must be done at regular hours. Three regular meals must be taken, namely, breakfast, dinner and a light supper. The best hours are :—7.30 to 8 a.m. ; 1 p.m. ; and 8 p.m. But in addition to the above it is usual to give a man a raw egg beaten up in skimmed milk on getting up in the morning, and a little tea with dry toast or bread and butter in the afternoon.

The meals must not be hurried over, plenty of time must be given to masticate the food, and an interval of rest taken after the meal, before settling down to work. A glance over the newspaper after breakfast, a little chat after dinner, and some light literature after supper will make the time pass pleasantly and give the desired rest.

Breakfast.—Beef steak or mutton chop, occasionally eggs, sole, plaice, or other white fish, boiled. Nothing cooked in fat is justifiable. Weak tea or coffee with skimmed milk, and as little sugar as will suffice to flavour the tea. If obese, avoid the sugar. Dry toast or bread 24 hours old. A small quantity of porridge may also be taken in the winter.

Luncheon.—When necessary, a crust with a piece of cheese, especially Gruyere (if cheese does not cause indigestion), skimmed milk, water, or ale half-a-pint (300 c.c.), less if possible.

Dinner.—Beef or mutton. Roast usually, occasionally boiled. Lamb, venison, chicken, rabbit or game for a change. One small potato, a little spinach, cauliflower, asparagus, lettuce, endive, cabbage or other green vegetables free from sugar forming elements. These are useful on account of the mineral elements and salts they supply.

Take little or no bread when vegetables are eaten. Occasionally some stewed unsweetened fruit.

Drink half-a-pint (300 c.c.) of ale, water, mineral waters, or

skimmed milk if luncheon is taken, if not, then one pint is allowed.

Tea.—A cup of weak tea, with skimmed milk (sugar limited), a small amount of bread and butter, dry toast. If necessary, *i.e.*, not feeling strong and well, a lightly boiled egg.

Supper.—Anything mentioned above which is light.

Avoid all starchy foods. Also parsnips, beetroot, turnips and carrots. Soups, cream, oils, some authorities prohibit fats, but a little good butter at tea-time will be permissible. Avoid pork and salt meats (which create thirst), sardines, salmon, all salt and oily fishes, condiments and vinegar. Bread must be stale or toasted.

Next to the diet, massage, friction and the cold bath do the muscles most good.

Time of Rising and Retiring.—The amount of sleep necessary to keep a man in perfect health varies: some want seven, others eight hours. When a man keeps regular hours, he generally wakens when nature has refreshed him sufficiently, so that generally speaking, when a person wakens is the best time to get up. Till such regularity has been acquired, eight hours may be taken, and as many of these before midnight as is possible with comfort and convenience. Bed-time, therefore, should be from 10 to 10.30 p.m., and getting up 6 to 7 a.m., the latter in winter when day-break often is so late as to preclude early outdoor exercise.

At first, early hours will seem strange to many men accustomed to late hours, and sleep may be impossible, but a very few days will accustom them to the change. A good rub down and a gentle walk last thing at night will often induce sleep. If the man does not drink ale for supper, he may try what half-a-pint of ale the last thing will do, or as some prefer, a small wine-glassful of good wine, but this must be discontinued at the earliest possible moment.

The bed should be a spring bed with firm mattress, the bedroom should be well ventilated.

A few words about the muscles of the body.—Nothing enables muscles to withstand fatigue, and to bring them into

good hard condition, like meat, and of all meats lean beef is the best.

But while beef is most nutritious, it is not so digestible as mutton, and as in the process of digestion work is diverted from muscle making, it is necessary to restrict the work of the stomach as much as possible. But underdone, juicy, tender beef, well masticated, will give so much greater tone to muscles, as to make up for the slightly longer period it takes in its digestion.

Meat should be taken twice a day, at breakfast and dinner. It may be roast or boiled, more nutriment is lost in boiling meat as this is usually done than in roasting it, so that on the whole, roast meat is best. Raw meat is quite unnecessary, and is most indigestible. The raw meat juice may be taken with advantage (page 162).

Rubbing and massage stimulate the circulation, and increase the contractile power of muscles. A muscle which has been exhausted by repeated stimulation with an electric current so that it cannot perform a certain feat, has, after a few minutes massage, performed the task easily.

Proof that muscles can perform their functions with greater ease and less fatigue after massage can be multiplied to any extent.

But it is essential that the massage should be well done, and although a trained masseur would be most valuable, a careful study of the article on massage (page 13) will enable an intelligent person to be of great service.

In relieving the sense of fatigue, and the sore tender feeling which the young athlete, and in early days of training, even the veteran, is prone to, a practical example of the value of rubbing is obtained.

In the experience of the merest tyro the sense of relief and comfort felt after an ordinary rubbing with Elliman's is considerable, but if instead of merely a good indiscriminate rubbing, kneading and tapping were also added, infinitely greater relief and benefit would be derived. Massage improves the "tone" of muscles by inducing a plentiful supply of new blood, helping the lymph flow, and generally increasing the tissue changes. It

also minimises the effects of slight strains and injuries which constantly tend to occur while taking exercise.

Its good effect upon the skin and its function is obvious to the eye. The rough, harsh "goose skin" condition disappears, the skin becomes shiny and glossy and is not easily bruised. The subcutaneous fat disappears, all the sweat glands and "grease" glands are stimulated, the pores are kept free from accumulation, and thereby thorough removal of numerous noxious products secured.

The cold bath in *any* form is useful. No doubt the shower bath is most beneficial and can easily be improvised, but the cold sponge, and the plunge bath are of great value.

A test as to the suitability of the cold bath is given under the heading of Taking Cold (page 89).

If a man has not been accustomed to a cold bath, he can gradually work his way from the warm to a cold bath by daily lowering the temperature of the water. Two baths a day are sufficient under all circumstances. The first should be taken on getting up in the morning, and the second after the severest exercise. In very cold weather absolutely cold water is not essential, the degree of shock is unnecessary.

After the morning bath a brisk rub with a towel is sufficient, what is desired is to thoroughly restore the circulation, and so "flush" the skin after the cold applied to it.

The towel should be rough, and the drying thorough. Such a morning bath will do a great deal to prevent chills, stimulate the appetite, and thoroughly invigorate the athlete.

Rapid dressing and undressing is always desirable.

The second bath should be followed by a thorough brisk rubbing and then a systematic massage of all the muscles, using a moderate amount of Elliman's in the process. It should be taken immediately the athlete has done his heaviest work.

It is sitting about for a long period while or after sweating heavily which is so dangerous, not the rapid bath and the after grooming. The latter should not be carried on in the open air.

Turkish baths must be taken carefully and in moderation, usually during the earliest week or weeks of training, two a week

are safe and in conjunction with dieting and purgation will suffice. It is best not to crowd a Turkish bath, a brisk purge, and severe exercise into one day. Omit the purgative or give only a very mild laxative, and do not give a heavy task in the way of exercise. In taking the Turkish bath, do not drink much water. At times sweating will not commence until after a little drink, do not take a second. Turkish baths are quite unnecessary for any but obese men, in some cases no doubt they would do positive harm.

Clothing.—What has been said under Taking Cold (page 89), is equally applicable here, unless such be necessary for the purpose of sweating, no more in quantity should be worn than will suffice to keep a man comfortable.

Whatever the quantity, the underclothing should always be woollen.

Walking will form a considerable portion of the training for all branches of athletics, therefore the socks should fit and be made of wool, the boot soles should be thick. Tender feet should then, with a little care, be almost unknown (*see* Sweating Feet, page 143).

Towards the end of the training, the actual clothing used during the special spins or work, should be of the same consistence and character as will be used during the contest.

After all exercises, if there be the slightest suspicion of dampness of the underclothing from sweating, change at once and do not sit about.

Similarly, if during exercise rain has fallen, change, run no risks.

What quantity of fluid is permissible.—It is well to remember that the more one drinks, the more fat one tends to put on, while the more lean meat one eats, the more fat one tends to remove.

Thirst in the case of the average man may be a terrible trial, and nothing but self-control can be relied upon to successfully resist it during the first week or ten days.

Although probably not generally recognised, thirst may be entirely quenched by taking a mouthful of water and after rinsing the mouth and gargling the throat with it, spitting it out. One really feels thirsty with one's tongue and mouth, to satisfy these

it is not essential to swallow the liquid. A thorough bathing of the face and hands also tends to relieve the thirst.

Many athletes at first have not much appetite for breakfast, but are thirsty, they must nevertheless not take more than one big cupful of weak tea or coffee. If egg and milk be taken on rising this makes another half-pint. For dinner, one pint of ale, for tea, another cupful of weak tea, and for supper, if desired, half-a-pint of ale, water, or skimmed milk. In all, three pints of fluid, which will be ample ; drinking between meals is not permissible on any account.

Physic.—The above kind of diet necessarily entails an absence of much residue, so that constipation is the rule, and to avoid this the athlete cannot fly to the remedy an ordinary individual can, namely, increase the amount of vegetables. He must take laxatives, the simpler they are the better, and although fruits contain a considerable amount of sugar, and are therefore fattening, still, a small quantity of well-stewed prunes without sweetening, or a little stewed rhubarb, or currants, may be occasionally taken.

Should these fail, then drugs must be taken. The confection of sulphur and senna mixed, dose, two teaspoonfuls at night. Or a tabloid of Cascara Sagrada at bedtime, and an occasional teaspoonful of Epsom Salts in the morning.

For thorough purging on first going into training, take two pills of colocynth and hyoscyamus at night, or three grains (20 cgm.) of calomel, followed by two teaspoonfuls of sulphate of magnesia or soda, in two tablespoonfuls of water (*i.e.*, concentrated) in the morning.

Wind and second wind.—When a man gets “winded,” it is an indication that his heart is being overtaxed. During the first week of training, the athlete will find after very little exertion that he has a feeling of intense oppression at the chest, with pain of a constricting character over the region of his heart, worse every time he breathes, or with every step or pull he takes.

The sensation is very alarming, but if the heart is sound, the duration of the condition is very short, and in a brief space of time, a feeling of relief and ability to do much more work replaces it.

The explanation of the foregoing is that the heart was being put to enormous exertion to pump the blood through the lungs and muscles against increased resistance, and the violence of its efforts gave rise to the pain. Soon it accommodated itself to the new condition, and as a result the person obtained "second wind."

During the subsequent training, this condition disappears, probably entirely, but may re-appear on unusual occasions, or on the day of competition, partly through excitement, and partly because the athlete will exert himself to an extent not hitherto attempted.

Training for all practical purposes is directed as much to getting the heart into condition as to getting the other muscles into form, hence all exercises must be gradually increased; training may be attempted too quickly.

Getting stale or going off training is due to either overwork, loss of appetite, indigestion, or some indiscretion which should be rectified. Often it is due to depressed spirits, and should be combated by pleasant companionship, or a little harmless amusement. Rest or modified exercise, variety in food, and attention to the bowels usually set the athlete all right in a week or so.

SLEEPLESSNESS.

Insomnia arises from all kinds of illness, anxiety, pain, over fatigue, especially from brain work, and in a large number of cases, is due to preventable causes, especially dietetic errors. The taking of certain foods before retiring (which foods experience will or should have already taught the patient) leading to flatulence and distension of the stomach, which, pressing upon the heart, causes great oppression.

Also the taking of coffee, tea, alcohol, and in some people, smoking on going to bed, excite the heart.

Insufficiency of food and hunger also entail sleeplessness, deficient bed clothing, cold feet, defective ventilation, also too little exercise and absence of "healthy" fatigue.

Treatment is to avoid anything which is indigestible. Do not take a meal too late, on the other hand do not go to bed

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Slough ENGLAND

FOR STIFFNESS. ACHES. SPRAINS. BRUISES.

Illustration showing several athletes running over a hurdle. A bottle of Elliman's Universal Embrocation is shown on the right, with text indicating it is prepared by Elliman Sons & Co, Slough, England.

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1/12

IT I
WILL
HAVE
OR I
WILL
HAVE
NONE.

FOR STIFFNESS. ACHES. SPRAINS. BRUISES.

Illustration showing a foot race with several runners. A crowd of spectators is visible on the left. A bottle of Elliman's Universal Embrocation is shown on the right, with text indicating it is prepared by Elliman Sons & Co, Slough, England.

hungry. Regulate the bowels, and avoid constipation. If obliged to study at night, take a brisk walk before going to bed.

If over fatigued, a warm bath, followed by a cup of hot milk, or a little wine half-an-hour before retiring, may induce sleep.

If the patient suffer from flatulence, a glass of water as hot as can be taken with a pinch of carbonate of soda sufficient to cover a sixpence added and taken in sips is useful, just before going to bed. Peppermint water and other carminatives help to relieve the condition.

Flatulence may be relieved in many cases by taking one drop of carbolic acid or creosote in a little water.

Use the hot water bottle for the feet. Frequent turning or changing the pillow, by its coolness, will often induce sleep.

Massage with Elliman's, by gentle downward stroking of the forehead and temples, also behind the ear and the nape of the neck, frequently soothes and induces sleep.

PALPITATION

When due to heart or nervous disorders, must be treated accordingly. Such sufferers should rest in the recumbent posture during an attack, and avoid all excitement or exertion. When due to flatulence, a common cause, the accumulated wind in the stomach may be dispersed by taking sal volatile, 20 to 30 drops in a little hot water, or essence of peppermint 3 to 10 drops on sugar, or compound tincture of lavender, a teaspoonful in a little water, or by sipping very hot water.

The application of fomentations (page 87) and gentle massage to the front of the chest and pit of stomach.

An occasional pill to clear the bowels is useful, and care in diet should be observed.

HICCOUGH

Is produced by innumerable causes, but chiefly by indiscretion in diet, or by rapid eating, resulting in flatulence, or by the taking of hot or spiced foods. Dyspepsia, many nervous conditions, diseases of the bowels are also causes.

Treatment depends upon the cause. Where this is unknown, anything which causes a powerful action of the Diaphragm, such as holding the breath as long as possible, taking a prolonged deep inspiration, or counting a hundred without taking breath may effect relief.

In other cases sipping cold water, or the application of a hot water bottle, or a blister, or friction with Elliman's over the pit of the stomach may act beneficially.

In other cases, a Blister (page 85) to the nape of the neck may be tried.

- Internally, 20 drops of spirit of Camphor,
- or of
- Spirit of Chloroform 10 to 15 drops in half a wine-glass of water,
- or of
- Spirit of Cajuput 5 to 20 drops on sugar, may be given.

FROST BITE.

Elliman's may be rubbed in as First Aid

How to Make certain Requisites.

BEEF TEA.

Take one pound of fresh, lean, juicy meat, remove all fat, then cut it up in small pieces. Put it into a stone jar or jug, with one pint of *cold* water and a small pinch of salt.

Cover the jar or jug with a lid, let it stand for twelve hours (say all night). Then place the *jug* in a saucepan of boiling water, and let the beef tea *simmer* very gently for three to five hours. Strain through muslin. Never let it boil.

A Second Way : put the pound of beef, cut up, in half a pint of cold water with a little salt, and let it stand for one hour or more. Now strain off this liquid and put it aside.

Add to the beef a fresh half pint of cold water and simmer gently for one hour. Strain. Mix the two liquids. Less beef may be used for weaker beef tea.

If the patient is able to digest fairly well *whole beef tea* may be given. Make, by pounding the beef left after making the beef tea into a pulp, in a mortar or strong basin and adding it to the liquid.

Beef tea is only a *stimulant and restorative*. It is not a true food. But the whole beef tea contains valuable nutriment, when such can be taken and digested by the patient.

Peptonising means predigesting. Even a weak stomach and intestines may absorb such nutriment. But peptonised food is not very palatable. Never continue giving peptonised food longer than absolutely necessary, as it causes the stomach to become "lazy" and inefficient, so that when the patient should be

digesting solid food he remains on slop diet, because the stomach now refuses to digest what was previously digested for it.

HOW TO PEPTONISE BEEF TEA.

Mince finely half-a-pound (250 gram.) of lean beef, add to it one pint (600 c.c.) of cold water and a third of a teaspoonful of Bicarbonate of Soda. Let it simmer for one or one and a half hours. Allow it to cool till it is lukewarm (140° F). Then, add to it one tablespoonful of Pancreatic solution (Liquor Pancreaticus, Benger), keep this mixture in a warm place for two or three hours, stirring occasionally. Then strain through a fine sieve or muslin, and boil the fluid for five minutes to stop the process of digestion. It should be served with a little salt.

Half peptonised beef tea is made by mixing equal parts of ordinary beef tea and peptonised beef tea.

TO PEPTONISE MILK.

To a pint (600 c.c.) of milk add a quarter of a pint (150 c.c.) of cold water. Divide into two halves. Boil one half and add to it the cold half, this secures the correct temperature. Now add two teaspoonfuls of Benger's Liquor Pancreaticus (or the peptonising pellets of Savory and Moore), and a third of a teaspoonful of Bicarbonate of Soda.

Place under a tea cosy near the fire. Taste occasionally and as soon as a bitter taste is perceived, immediately boil for five minutes to stop digestion. Usually ten minutes suffices to peptonise quite efficiently.

Gruel, etc., can be peptonised in the same way.

RAW MEAT JUICE.

Take a pound (500 gram.) of good lean juicy meat, free from fat, mince finely, and let it stand in a quarter of a pint (150 c.c.) of cold water for an hour. Strain and press through fine muslin. It may be pressed by means of a lemon-squeezer.

This raw meat juice is said to be the most strengthening and easily digested animal food, and is invaluable for children.

CREAM MIXTURE FOR CHILDREN.

Ingredients—

Cream	-	-	-	-	4 ounces (120 c.c.)
Water (warmed)	-	-	-	-	12 „ (360 c.c.)
Sugar of Milk	-	-	-	-	$\frac{1}{2}$ an ounce (15 gram.)

More or less added Milk.

For an infant a few weeks old, no milk is added, then two ounces, four ounces, and lastly equal parts of milk are added, as the child increases in age or strength.

BARLEY WATER.

Put two good tablespoonfuls of washed pearl barley into a saucepan with a pint (600 c.c.) of cold water, boil slowly down to two-thirds of a pint and strain. A little sugar may be added if desired.

WHEY.

Take half a pint (300 c.c.) of skimmed milk, warm to 96° F. (gentle heat) and put into it a little Benger's artificial rennet. Stand on the hob until warm.

When it is "set" remove the rennet, break up the curd quite small with a knife, and let it settle to the bottom. Decant off the whey, boil it and add a little sugar of milk.

If a piece of actual rennet be employed it can be kept and used again as required.

HUMANIZED MILK.

Having made the Whey and *boiled it*, take one-third of a pint (200 c.c.), and while hot, dissolve in it one to two teaspoonfuls of Sugar of Milk. Now let it cool, when cold add new milk two-thirds (400 c.c.) of a pint to make a pint, also a teaspoonful of cream, and stir.

It must be made fresh every twelve hours, and warmed as required.

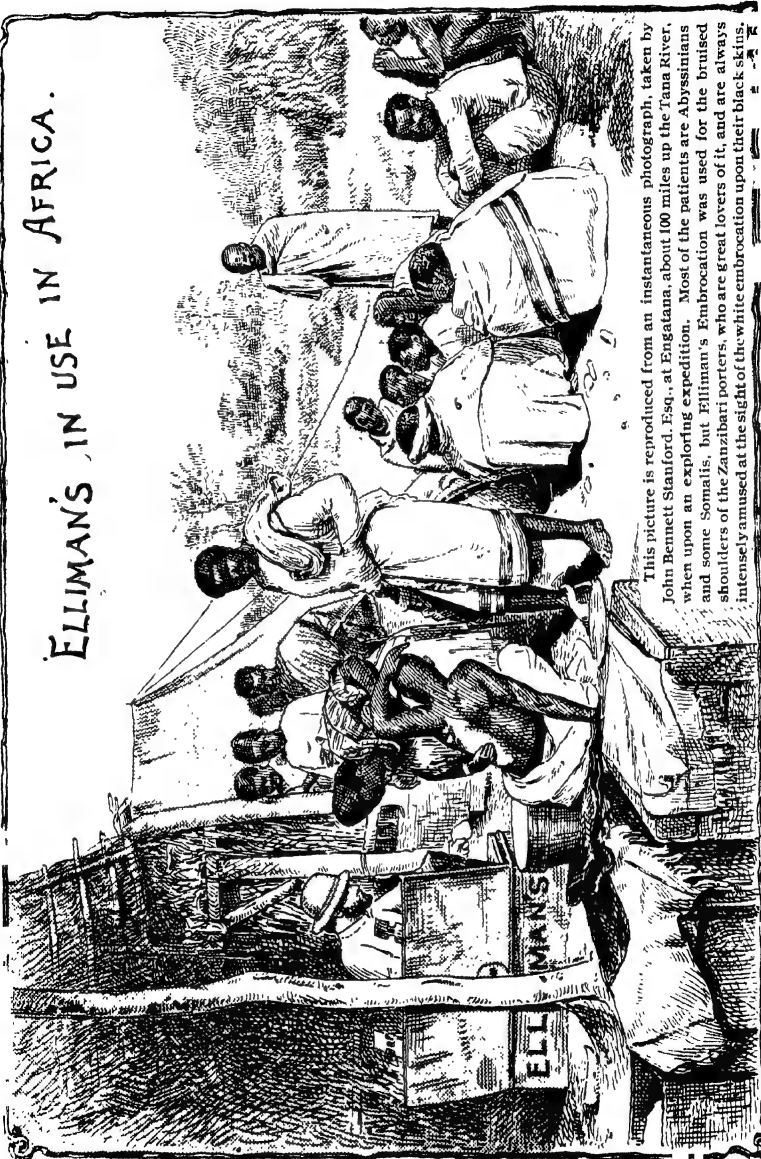
For a very young child more whey should be used and less milk.

ALBUMEN WATER.

Take the white of two fresh eggs and beat up thoroughly in half to one pint (300 to 600 c.c.) of cold water, strain through muslin and add a pinch of salt.

(Continued on page 166.)

ELLIMAN'S IN USE IN AFRICA.



This picture is reproduced from an instantaneous photograph, taken by John Bennett Stanford, Esq., at Engatana, about 100 miles up the Tana River, when upon an exploring expedition. Most of the patients are Abyssinians and some Somalis, but Elliman's Embrocation was used for the bruised shoulders of the Zanzibari porters, who are great lovers of it, and are always intensely amused at the sight of the white embrocation upon their black skins.

ADVERTISEMENT.



The Dogs-Birds Section (Treatment of Animals) of the Elliman E.F.A. Book, 56 pages, is sent free and post free to any address. See booklet enclosed with 1/- bottles of Elliman's Royal Embrocation for use on animals.

ELLIMAN, SONS & CO., SLOUGH, ENGLAND.

This quantity of albumen water may be given in twenty-four hours, with or without other nutriment as occasion demands. It serves as a nice vehicle for the administration of stimulants, and is a pleasant drink.

It is the best form of fluid nourishment to give children when suffering from Diarrhœa.

THE SICK ROOM.

The Sick Room should be large, face south or south-west, have a good light, contain a fireplace, and a window which opens.

The *temperature* of the sick room should be kept *uniformly* about 60° or 65° F. Warming the air does not make it impure nor cooling, purify it, both should be done without transgressing "Ventilation."

A thermometer should be kept hanging in the room. At night the temperature of the air is naturally cooler, and this should be guarded against, else the patient may get chilled. Night air is probably more pure than day air, unless there be numerous shrubberies or flowers just under the window.

Cut flowers, and anything tending to lend a cheerful aspect can be introduced during the day only, into the sick room, but no living plants or flowers should be allowed in at night.

No curtains, knick-knacks, carpets, unnecessary furniture should be permitted, especially in infectious cases. All collect the dust and dirt, and therefore retain infection.

Ventilation.—By this is meant the constant change of air in a room without the production of a draught.

One of the best means of effecting this, is to keep a small fire constantly burning in the room, or if the temperature is too warm, a small lamp can be burned in the grate. Never draw down the register.

If the room is a large one, the bed should be placed so that it is not between the door and fireplace, or the window and fireplace, else it is sure to be in a draught, passing from one to the other. Low screens can often be placed so as to exclude draughts.

Under these circumstances, the door or the upper part of the window may always be left open.

A good plan is to raise the lower part of the window by means of a block of wood four or five inches deep, and the breadth of the window. This leaves a slit opening upwards between the two halves of the window, and prevents draught.

These plans must be supplemented by periodically, *i.e.*, three times or more daily, covering the patient carefully with the bed-clothes, placing the sheet over his head, and then throwing open both windows and door for three or four minutes, then they are closed, and after another few minutes the patient may be uncovered.

The signs of bad ventilation are not always obvious to persons who have been long in a room, but are at once perceived by a person just entering it, so this has to be guarded against. The signs are a stuffy, heavy, slightly foul odour, recognised as closeness, and if endured long, headache, drowsiness, heaviness, loss of appetite and languor, with foul breath and coated tongue result.

NURSING.

The Nurse should reside on the same floor as the patient, or near by, and must keep strictly aloof from the other members of the family in all infectious cases. She must have her regular hours for sleep, exercise, and refreshment.

If possible, a movable bath should be kept in the patient's room.

In infectious cases, destroy everything possible, that has been in contact with the patient, by burning. A sheet should be hung up outside the door of the sick room, and in other places if convenient. This must be kept moist by sprinkling over it frequently a carbolic solution made by mixing one ounce (30 c.c.) of carbolic in two pints (1200 c.c.) of water. A garden syringe is most convenient for sprinkling.

The vessels to receive all excreta must contain half-a-pint of an antiseptic solution; one which may be universally used consists of one ounce (30 c.c.) of carbolic in a pint (600 c.c.) of water, to which is added a tablespoonful of table salt. The excreta, especially in the case of typhoid fever, must be well-mixed with

the solution, of which enough must be added to thoroughly cover all solids, and allowed to stand (covered) one hour, before being passed into the w.c.

Where there is no w.c., the excreta must be placed in a stone-ware vessel, containing half-a-pint (300 c.c.) of the following :— Either commercial hydrochloric or sulphuric acid diluted with water 1-20. To this is then added two ounces (75 gram.) of chlorinated lime, and the vessel well-covered, placed in the open far from the house for two hours. Its contents may then safely be thrown into the cesspool or midden.

The bed should, if possible, be a single bed, *i.e.*, narrow, of woven wire with horse-hair mattress, covered by a couple of blankets, thus securing smoothness and elasticity.

Under the linen sheet should be placed a mackintosh water-proof sheet to preserve the blankets and mattress from soiling. A second sheet folded in three should be placed under the patient over the usual sheet, across the middle of the bed as a "draw-sheet," which can be easily changed if soiled, without disturbing the patient to any great extent. In doing so, the patient is rolled over on one side, and the sheet folded over after him, then when he is rolled on to the other side over the folded sheet, this can be taken away. At the same time a clean draw-sheet is substituted.

Nursing.—Careful attention must be paid to bodily cleanliness and the prevention of bed sores. Cheerfulness, a constant anticipation of the wants of the patient, gentleness and perseverance are the main requisites, combined with common sense, for good nursing.

Sponging is done to reduce the temperature, to allay restlessness and to promote sleep. The water may be iced, cold or tepid, usually the latter suffices.

To sponge.—Take off the nightdress and cover the patient with a blanket or sheet. Have a soft sponge, a towel and the water at desired temperature convenient.

The sponge is just made moist, and one limb gently wiped with it, then dried with the towel. Then the remaining limbs alternately and lastly, the trunk are treated in the same way. A good nurse will not damp the bed clothes. Various scents, lavender water, eau de cologne, etc., added to the water are very refreshing.

BED SORES are due to sustained pressure over small areas, causing death of the part and separation by sloughing.

Prevention is the desideratum, and is secured by perfect cleanliness, by absolute dryness, smoothness of sheets, *i.e.*, absence of wrinkles and creases, bread crumbs, etc.

Also by constant relief of pressure by slightly changing the position of the patient. Preparation of the skin by hardening with spirit lotions, the use of dusting powders, and gentle friction to encourage the circulation in the part.

If there is a tendency to be constantly wet by sweating, or dribbling away of urine, etc., a little zinc ointment may be applied.

If a bed sore forms, then further advice should be sought, if this be unavailable, *see* Wounds, page 120. In any case, the pressure must be removed or relieved by the use of a ring pillow, or full length water bed. Bony points are the commonest seats of bed sores, but the fleshy parts may suffer, the midline of the back, low down over sacrum, over the hip, at the heels, over the shoulder blades, etc.

If the heels are sore, place a pillow under the legs to reach as low as the ankle, but leave the heels unsupported, hanging over the end.

Spirit lotions consist of diluted methylated spirit, one with one of water, or whisky and water, one to two of water.

The following makes a good lotion :—

Rectified Spirit	-	-	-	1 ounce (28 c.c.)
Tannic Acid	-	-	-	10 grains (.65 gram.)
Camphor Water	-	-	-	2 ounces mix, (56 c.c.)

either of which may be dabbed on with a sponge after the daily washing, and when dry, the skin may be gently stroked and rubbed with the palm of the hand.

To change the position of a patient, he must be rolled over upon one side, and gently propped up with pillows in that position. Then changed over on to the other side when necessary.

After every evacuation of the bowels, great care in cleansing and drying is absolutely essential.

Bed pans must be thoroughly dried before being put under the patient. The bed slipper is more comfortable than the old fashioned bed pan.

Dusting Powders.—

1. Zinc Oxide - - - - - - 2 parts
 Powdered Starch - - - - - 4 "
 Powdered Boric Acid - - - - - 1 "
2. Instead of boric acid, powdered salicylic acid may be used in weaker proportion, about half strength.
3. Zinc Oxide - - - - - - 3 parts
 Starch - - - - - - 8 "
 Powdered Camphor - - - - - 1 "
4. Calamine, Starch, Fuller's earth and Violet powder are all used as dusting powders, but Fuller's earth is best avoided.

ISOLATION AND DISINFECTION.

Isolation.—Select a room on the top floor or farthest removed from other inmates. The requirements in isolation are as for sick room generally (*see* page 166), only more imperative. Remove all unnecessary furniture, hangings, carpets, pictures and everything likely to retain infection.

A fire is absolutely necessary to burn infected dressings, rags, etc., also to secure warmth and ventilation. It is essential to have a water-closet near at hand, and a lavatory or some substitute which is reserved solely for the patient's requirements.

To Disinfect Closets, the best thing to do is to add to the after flush, which fills the basin, some Permanganate of Potash or Carbolic Powder, and to re-flush frequently.

To Disinfect Rooms after removal of patient. Thoroughly sprinkle the room with carbolic solution, made by mixing one ounce (30 c.c.) of carbolic, in two pints (1200 c.c.) of water, specially attend to corners and crevices, moisten and cleanse all articles of furniture with soap and water, followed by carbolic solution. Spread out things which cannot be directly received into carbolic solution, and removed (*see* above), and sprinkle with the antiseptic.

Then paste up with paper every crevice and possible source of leakage of air, not forgetting the fireplace.

The best antiseptic to employ in the form of vapour for the further disinfection of the room, is formalin. This is now sold in tablets, and special lamps are supplied in which they may be

burned. Having obtained these requisites, place sufficient of the tablets in the receptacle, light the lamp and at once lock the door, and paste up all cracks and crevices on its outside.

The room is kept closed for 24 hours, then thoroughly ventilated, the windows, doors, and fireplaces being thrown widely open, are left so for some days. Sunlight and air are Nature's disinfectants.

The wall paper is then stripped off. Ceilings white-washed. The bed should now be sent to the sanitary authorities for more thorough disinfection, and all suspicious articles of clothing should be likewise treated.

Note.—That nothing weaker than one ounce (30 c.c.) of carbolic to a pint of water (600 c.c.) is of any use as a disinfectant.

That plenty must be used.

That burning and so destroying all unnecessary infected articles is safest, and therefore that rags and other useless articles should be used where possible, in order that they may be burned.

That discharges from mouth, nose, etc., are common sources of infection, and so must be guarded against.

That deodorants only hide and do not destroy infection.

That the excreta must be very carefully destroyed.

Clothing.—When possible burn. Ordinary bed-clothing and suitable articles may be received at once into, and steeped for 24 or 36 hours in an antiseptic solution of one ounce of carbolic to a pint of water.

This must cover every particle of material and be thoroughly mixed. They may then be boiled. It is well to add some soda to the water for boiling.

Valuable articles, which will not stand soaking or boiling, may be disinfected by the sanitary authorities with dry heat.

FEVER: ITS SIGNS AND SYMPTOMS AND GENERAL TREATMENT.

The temperature should be taken in the armpit or mouth, a slightly higher temperature is obtained in the mouth ($\frac{1}{4}^{\circ}$ to $\frac{1}{2}^{\circ}$) than in the armpit.

1. Fever may occur suddenly with a rise of temperature $99^{\circ}4$ to 106° F. accompanied by :—
2. A rigor or chilly sensation (*see* Malaria, page 193), in children it is often ushered in by convulsions.
3. Flushed face.
4. Increased frequency of pulse and respiration. Pulse is large and strong, *i.e.*, it is easily felt.
5. The throat is dry, tongue foul, whitecoated. There is loss of appetite. In some cases collection of dry mucous on lips and teeth (*Sordes*).
6. Hot, dry, pungent skin.
7. Eyes bright and glistening or sometimes watery.
8. Constipation and scanty amount of urine, high coloured and with red deposit.
9. Feeling of great lassitude, and loss of strength. In prolonged fever marked wasting.
10. Considerable restlessness.

Asthenic Fever.—Where the patient is exceedingly ill the character of the fever changes, and it assumes what is called the typhoid state or Asthenic Fever, *i.e.*, without strength, because it closely resembles the state of a patient in the third week of typhoid. Its symptoms then are that the patient becomes more heavy and stuporous, and there is :—

1. Pulse while still frequent is now small and weak, not easily felt. Respiration also is shallow.
2. Patient becomes delirious, often muttering, worse at night. The eyes may be half closed or bright and staring. Tongue dry, now brown and reddish, often cracking. He may hiccough incessantly.
3. He may be picking at the bedclothes, or trying in a feeble way to catch imaginary objects in the air.
4. Skin tends to be clammy. He passes everything under him unconsciously.

This condition is more common in drunkards, or in those who have suffered much ill-health, or are broken in health from any cause as from prolonged illness, starvation or weak constitution.

Fever may terminate in one of two ways :—

1. Suddenly by "Crisis" with profuse perspiration, diarrhoea or large amount of urine. This occurs most commonly in pneumonia, about the 5th to 9th day, and usually indicates that the greatest danger is past. Also when a foul wound is well cleansed or a bad abscess opened.
2. Gradually, much the more common termination termed "Lysis."

Treatment.—According to which type of fever the case belongs to will depend the treatment. But in every case the first thing to do is to remove the cause. If a foul wound, cleanse it. Many causes cannot be removed, yet they may be specially treated as in diphtheria, when the throat is treated, in rheumatism, when proper remedies are applied, etc.

As fever is the work of Toxins, so certain diseases are treated by "Anti-toxins," which are injected under the skin.

Diet and Nursing.—*The diet and nursing are most important.* The *diet* must always be fluid, as all the digestive functions are disordered, and solid food cannot be digested. For an adult three pints of milk, diluted with one pint of water, and one pint of beef tea every 24 hours is ample.

The bowels should be kept acting by means of mild purgatives or enemas. Note, in case of fever likely to end by crisis, especially pneumonia, purgatives must be carefully prescribed, else a fatal diarrhoea may be set up.

Drugs.—Quinine, one grain (6·5 Cgm.) ; or Antipyrin, five grains (·3 gm.), are given every three or four hours, according to the height of the temperature.

The Diet.—So much body waste results from fever that it is all important to prevent such waste. As digestion is greatly disturbed the most easily digested food and the most nutritious must be given. Milk and beef tea are the two sheet anchors in maintaining the strength, and regular feeding is essential.

Milk, treated in the following manner may be given by means of a feeding boat every two hours, in severe cases, night and day.

Each Feed for an Adult consists of:—Milk, five ounces (135 c.c.), *i.e.*, $\frac{1}{4}$ pint, add boiling water, soda water, toast water or barley water of either of them one ounce (28 c.c.) ; a pinch of bicarbonate of soda added is always useful. The quantities may be doubled and given every four hours in less severe cases, or every three hours during the day and once at night, or not at all during the night unless the patient wakes.

If the milk is not digested, as shown by curds in the stools it may be diluted more freely, or the patient fed oftener, but with smaller quantities of milk, or the milk may be half or fully peptonised.

Beef Tea should be given in quantities of four to five ounces (120 to 135 c.c.) every five or six hours, either replacing a feed of milk or supplementing it according to the strength of the patient. It may also be given half or fully peptonised if the patient is very weak or if it causes diarrhoea, which is not infrequent.

Mutton, veal or chicken broth may alternate. These may be made palatable by the addition of fresh vegetable juices, introduced by stewing in the beef tea or broth, chopped up vegetables contained in a muslin bag, and then squeezing out the juice, just before the broth is served.

Water may always be given in fever, but a variety of liquids is most desirable, as nothing tires a patient so much as the uniformity of diet. Toast, lime, barley, oatmeal, soda, lemon and iced water may be given, unless the physician expressly orders otherwise. Whey and albumen water (*see* page 163) serve both as drink and nutriment. Jellies are often liked, also Junket and Koumiss.

The yolk of an egg beaten up in beef tea or milk may be occasionally given.

During Convalescence.—Slight solids easily digested are now given in addition to the milk and beef tea, and gradually solid diet is resumed. Thus add to the milk a quantity of bread crumbs, then give cocoa made with milk, jellies, milk puddings, custards, lightly boiled white fish. Eggs lightly boiled or poached, bread and butter, soups. Later, a little chicken breast, then lamb or mutton chop. Braised fillet of beef, and so on.

In Cases of Asthenic Fever with drowsiness, the patient will have to be roused at regular times for feeding. In addition they usually need stimulants, varying from one ounce (28 c.c.) to ten ounces (300 c.c.) of brandy, whisky, or champagne in the 24 hours, *always given in small doses at regular intervals*. For a child of less than 12 months, 10 to 20 drops (.6 to 1 c.c.) every two to four hours according to age and condition. For an adult; from half a teaspoonful (2 c.c.) every four hours to one ounce (28 c.c.) every two hours.

Champagne is given in larger quantities at a time. Brandy and whisky are best given in the milk, or in albumen water, unless the patient has a desire to drink it with plain or with soda water.

Sleep being so essential, if a fever patient who has been restless should fall asleep, do not waken him to feed him, but as soon as he awakens, then give the food. The sleep will do him as much good as the food. But if constantly drowsy the patient must be regularly roused day and night for his feeds.

When the temperature reaches 103.5° F., and remains at this level, tepid or cold water sponging affords great relief (*see* page 168).

For Cleansing the Tongue, Lips, Teeth and Mouth, and the Nostril,

Use—

(a) Glycerine	-	-	-	-	-	-	3 parts
Water	-	-	-	-	-	-	2 „
Lemon Juice	-	-	-	-	-	-	1 part
(b) Listerine	-	-	-	-	-	-	1 „
Water	-	-	-	-	-	-	10 parts

on small pieces of cotton wool.

The conditions of the bed room, making the bed, changing of the sheets, sponging the patient if temperature is raised too high, avoidance of draught, yet maintenance of good ventilation, all these details are most important and make or mar the chances of recovery.

THE COMMONEST CONTAGIOUS OR INFECTIVE FEVERS ARE :—

Chicken Pox	Mumps
Diphtheria	Scarlet Fever
German Measles	Small Pox
Influenza	Typhoid
Measles	Whooping Cough

Each or most of them has a period during which the disease is developing in the body usually without any visible sign, this is called the Incubation. Then the disease shows itself by certain symptoms, which may be either sudden or gradual called the Onset. Then nearly all develop a Rash, at the end of a definite time which is seen first on some definite area of the body.

The progress of the disease is marked by stages, which, if the course of it be favourable, eventually end in convalescence during which, however, the patient is for a longer or shorter period still contagious or infectious to others, either by the skin "peeling" or by the excreta, etc. Anyone who has been in contact with such a patient, before being considered free from danger of conveying, or of acquiring the disease must undergo a period of quarantine.

MEASLES.

Period of incubation, 8 to 12 days. Onset in very young children may be by a convulsion or a shivering fit. In older persons with fever, 101° to 104° F.

1. Also with running at the eyes and nose.
2. Sneezing.
3. Wheezy cough or hoarseness. This stage lasts three or four days.

Rash.—On the fourth day a rash appears, consisting of dull red, minute, slightly raised points, forming horse shoe shaped patches, with intervening white skin, first seen on the temples, behind the ears, and at the margin of the hairy scalp, the whole body is covered with rash in 24 hours. The rash begins to fade on the third day. When the rash appears the fever may rise

higher, but soon it should fall. If it continues high after the rash disappears, it is due to some complication, either bronchitis, pneumonia, one of the other fevers, or earache.

Note.—That consumption frequently follows neglected measles.

Quarantine.—After measles, children must be kept away from school for three weeks after the rash disappears, and all clothing has been disinfected. People exposed to measles must be quarantined 16 days. The skin, nasal and eye discharges are most infectious.

Treatment.—At once isolate the patient (*see* Isolation, page 170). Good nursing is the most essential treatment (*see* Fever, page 171). Put the child to bed, and avoid chills. Give fluid diet. Keep the bowels regular. For thirst, lemonade may be given. During convalescence keep the child warm, and carefully cleanse the skin and scalp twice a day by baths.

SCARLET FEVER

Affects most commonly children of about four years of age.

Incubation.—One to three days.

Onset.—

1. Sudden fever (*see* page 172).
2. Sore throat and
3. Vomiting are the chief signs.
4. The glands in the neck, under the ears, are swollen and tender.

Rash appears 24 hours after onset. It is bright red, very diffusely spread all over the body, it is uniform, not patchy, looking like red goose flesh of boiled lobster colour. First seen on the neck and upper part of chest, then in front and behind the ears, and then spread all over the body.

Note.—The face is flushed, but has no rash, around the mouth the skin is markedly pale. If the skin be felt it is pungently hot and dry. In a few days the tongue, which has had a white fur on it, looks like a strawberry or raspberry showing red raised points through the white. The throat is very red, looks swollen and is tender. Rash lasts one to three days. The fever falls gradually from 104° F. or less to normal,

Complications.—Ear Disease and Inflammation of the Kidneys, Abscess in the Neck, and Joint troubles (page 50).

Quarantine the patient six weeks or longer if the skin peeling has not ceased. For those in contact, eight days. The skin, nasal discharge, and sputum are most infectious.

Treatment.—Isolation in bed in a suitable room (page 170).

Diet during Fever.—Slops, milk, arrowroot, chicken and mutton broth. Do not give strong beef tea. Later, *i.e.*, after temperature has been normal two days, bread and butter, eggs, custards, etc., followed by fish and poultry.

For Thirst give abundance of lemonade, soda water, plain water and such like. Also oranges and grapes.

After the temperature has been normal four days, let the child sit up in bed, wrapped in a blanket.

In 10 days, if no complication develop, he may sit up dressed. In 15 days he may leave his room, and a few days later be taken out a short time.

During convalescence, a warm bath to be given at night, commencing shortly after patient begins to sit up in bed. If fever continues above 104° F., sponge (*see* page 168).

If the patient be prostrated, give brandy, half to one tea-spoonful in milk, every four hours.

WHOOPIING COUGH.

Incubation two to twelve days, usually about eight.

Onset is insidious, and begins with a little troublesome cough, always worse at night; then there is fever, restlessness, and sneezing, getting worse and worse every evening. This lasts a few days, then the first stage of the disease begins.

There are three stages—

1. Catarrhal
2. Spasmodic
3. Declining.

The Catarrhal lasts 10 days, and may be known by the foregoing symptoms developing into an acute bronchitis, or, the cough becoming more hard, dry, and troublesome, with a little fever (100° F.), headache and malaise.

The Spasmodic Stage.—Then towards the end of the second week the cough becomes longer, louder and more exhausting. It appears to come on in the form of attacks which are worse towards evening. The intervals during the attacks are now more definite. After two or three days, the characteristic whoop appears. The child's face becomes red, it gives a series of short, quick, forcible expiratory efforts, then its breath is drawn in quickly with a whoop or a whistling sound; three or four such whoops occur, then the child is sick, or it brings up a lot of thick white phlegm through its mouth or nose.

The child soon knows of approaching attacks, and dreads them. Attacks leave the child quite exhausted, and often bleeding from the nose and lungs.

The Third Stage, subsiding spasm and attacks, is reached in four to six weeks, but a cough with loose phlegm may last indefinitely.

The disease appears singly or in epidemics.

Infection seems greatest during the first week of illness, but lasts a month after commencement of the whoop.

Quarantine the patient five weeks after the first whoop, and those in contact 21 days.

The mucous discharge from the lungs and nose is most infectious.

Treatment.—Isolation (page 170), rest, warmth, pure air, plenty of light nourishment, food frequently given in small quantities. Secure free ventilation. Avoid gas fire and light.

Keep patient in bed till the temperature is normal, and to house till the spasmodic stage is over.

During the Catarrhal Stage give syrup of squills, half-a-teaspoonful every three or four hours, or the following—

Bromide of Potash	-	-	2 to 4 grains (.1 to .3 gram.)
Glycerine	-	-	10 „ 20 drops (16 „ 1.2 c.c.)
Ipecacuanha wine	-	-	5 „ (.3 c.c.)
Water to	-	-	1 teaspoonful (3.5 c.c.)

for a child from 4 to 8 years of age every 4 hours. Also poultice the chest.

During the Spasm do not rub or poultice the Chest.—Give the above mixture to which is now added Tincture of

Belladonna 5 to 12 drops ('3 to '75 c.c.). *The latter number of drops is the maximum and should only be given when ordered by the doctor.*

A method of treatment by a specially prepared serum injected under the skin is said to greatly relieve the symptoms.

During convalescence change of air and iron tonics are necessary.

CURE FOR WHOOPING COUGH.

Discovery by a Belgian Doctor.

BRUSSELS.

Much interest is taken here in the discovery of the serum of whooping cough due to a young Brussels physician, Dr. C. Leuriaux. The serum is injected under the skin—in the abdominal region. From the experiments made up to the present, the injection appears to be quite harmless. About forty-eight hours after inoculation the first effects of the liquid are apparent. The serum produces an early cessation of the coughing fits and a considerable diminution of the normal period of the illness. If the injection be made immediately on the manifestation of the usual symptoms, the malady can be cured in from eight to ten days, its normal course being from six to eight weeks.

MUMPS

Is an infectious disease, which may rapidly spread through a household of young children.

Signs.—There is usually fever, but rise of temperature is generally slight, and does not last long. The child is indisposed, peevish and somewhat pale. There is a swelling just below the ear and jaw, on one or both sides. Mastication is painful, and the child is not disposed to talk or run about for a few days. One side may be affected and then the other.

Treatment.—Isolation (page 170). Retention in a warm room, a laxative and fluid diet. If there be much pain, fomentation, gentle friction with Elliman's, or hot flannels sprinkled with Elliman's may be applied to the side of the face.

The attack lasts five or six days, and may then involve the opposite side. The child should be kept indoors nine days.

Quarantine.—It is not safe to return to school for one month.

INFLUENZA.

Incubation three to four days, often less.

Onset of a typical case is sudden with high fever 103 to

105° F., sense of fulness behind the eyes and headache, pain in the back and limbs, intense prostration and often diarrhoea and vomiting.

It may be accompanied by bronchitis and even pneumonia or delirium; mild attacks appear with fever and a slight cough, or general indisposition as the only signs.

Treatment.—Isolation (*see* page 170). Strict confinement to bed during the whole time of fever and for a few days subsequently. General treatment as for Asthenic fever (*see* page 173). In Influenza one does not get into the true Typhoid, *i.e.*, Asthenic state. Maintain the patient's strength by good nourishing fluid diet. Give early, two grains (.15 gm.) of Calomel as a mild purgative. If sleepless, give an adult ten grains (.65 gm.) of Dover's Powder at bedtime in a little porridge or hot milk. Stimulants if needed.

During convalescence: change of air, good nourishing food, rest and pleasant surroundings.

Consider each case sufficiently serious as to merit the above treatment, as unpleasant complications follow even mild attacks.

For the worrying cough which frequently follows Influenza, give the following mixture:—

Syrup of Tolu	-	-	-	1 teaspoonful (3.5 c.c.)
Chloride of Ammonium	-	-	-	10 grains (.65 gm.)
Ipecacuanha Wine	-	-	-	10 drops (.6 c.c.)
Water add, to make	-	-	-	1 tablespoonful (14 c.c.)

To be taken every four hours.

CHOLERA

Is chiefly, if not wholly, communicated by water used for drinking, cooking or washing. Clothing, milk and food may be thus contaminated. The banks of low-lying rivers are the commonest cholera districts. High altitudes and cold districts the least common. Caravansera, ships, etc., convey the disease from place to place.

Prevention.—Thoroughly boiling all water. Maintain good general health, correct indigestion, avoid fruits and purgatives.

Disinfect all stools and clothing from cholera patients (pages 167, 170, 171).

Signs.—Cholera may commence suddenly with violent
(*Continued on page 184*)

Wharton



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diarrhœa, or it may begin with slight diarrhœa and colicky pains and become Cholera. Hence avoid causes of diarrhœa. The attack consists of profuse diarrhœa. The stools soon appear colourless like slightly turbid water, in which float white flaky bodies—"Rice water"—then vomiting sets in. The vomit soon assumes the peculiar rice-water character; intense prostration and collapse set in. The patient shrivels up into a mere skeleton, is quite cold, although he sweats considerably. The appearance becomes ghastly. If he survives he gradually gets warmer, and vomiting and diarrhœa gradually cease. Colic pains may be absent or present, if present they are usually severe.

Treatment.—During the early diarrhœa give opium (laudanum 10 to 30 drops, '6 to 2 c.c.) every three hours, or Chlorodyne in appropriate doses. Freely apply heat to the abdomen. Give chalk mixture, or Kino powder, as much as can be placed on a sixpence every hour. Whilst the diarrhœa is severe give plenty of fluid drinks, iced champagne, plain soda water, brandy and water, etc., but not in great draughts, let them be sipped.

Apply heat to the body and extremities (*see* Shock, page 110). Keep warm in bed, in a well ventilated room. Wipe the skin dry often. Put a hot-water bottle over the pit of the stomach, or a fomentation well sprinkled with Elliman's. Copious warm enemas of two or three pints (1200 to 1800 c.c.) of boiled water are useful. The object is to supply the fluid lost by diarrhœa and vomiting, and to keep up the patient's strength.

During recovery, great care in feeding must be taken. A gradual return to solid diet is essential.

DIPHTHERIA.

Diphtheria may affect the Throat, Larynx and Nose; most commonly it affects the Throat, Tonsils, and soft Palate.

Incubation two to four days.

Onset may be either gradual, with wandering aches and pains, disinclination for exertion, slight headache, loss of appetite and feeling of sickness, or more rarely there is sudden prostration with fever and sore throat.

Progress.—Internally the throat becomes tender, the tonsils and adjacent parts look swollen and bright red in colour; externally the neck looks swollen, the glands can be felt enlarged and tender. Temperature is 100 to 101° F. (not usually so high as in Quinsy throat). Pulse and Respiration are frequent. Urine is scanty. Then the weakness and anæmia become greater. Patches of dirty yellow white appear on the tonsils but soon *spread* to the soft palate and adjacent parts. Swallowing becomes extremely difficult, the patient may become delirious and die of exhaustion.

Note.—Cats are dangerous as they frequently carry infection.

The disease begins to decline in four to twelve days; if antitoxin be used improvement occurs in twenty-four hours.

Infection occurs from the throat and nose by spitting, coughing, and discharges.

Quarantine the patient at least one month after the throat signs have disappeared.

If a discharge from the ear, nose, or eye continues, isolate until this ceases.

Quarantine those in contact at least eight days.

Treatment.—Isolation (*see* page 170). Syringe the nose and throat every two or three hours with a lotion of Boracic acid, two teaspoonfuls (7 c.c.) to a pint (600 c.c.) of warm water. The throat is treated as follows:—Use a rubber syringe holding four ounces (120 c.c.), the nozzle of this is passed to the back of the mouth while the head is held well forward over a basin, and the stream directed against various parts of the throat.

Any discharge from the nose must be wiped with rags which are at once burnt.

For the pain and discomfort in the throat, apply externally hot fomentations sprinkled with Elliman's (page 89). Give brandy quarter to one teaspoonful (1 to 3·5 c.c.) every two to four hours if there be much prostration.

Diet.—Milk, broths, beef tea, eggs, jellies.

Note.—Diphtheria not infrequently leaves behind it paralysis of the soft palate, and the nerves going to the heart and diaphragm are often affected, so it is most important to keep diphtheria

patients in bed in a recumbent posture for three to five weeks, otherwise on exertion a fatal faintness may occur.

During Convalescence Tonics, change of air :

Parrish's Syrup	-	-	-	-	} equal parts
Maltine	-	-	-	-	
Cod Liver Oil	-	-	-	-	

made into a mixture.

Give one (3·5) to three (10·5 c.c.) teaspoonfuls three times a day.

SMALL POX.

Small Pox affects the dark skinned races most virulently. The only real protection is a previous attack of Small Pox or Vaccination.

Vaccination should be first performed when the child's age is under three months, the sooner the better, as the child feels less pain and is more easily manipulated.

Then re-vaccination every ten years to make the protection certain.

After vaccination the places do best when no dressing or protection is worn, but the child should be kept indoors when it begins "to take" and the part kept exposed.

This not always being convenient a piece of clean linen, frequently changed, should be stitched on the inner side of the sleeve of the vest or other garment.

Give the arm as much rest as possible by wearing a sling. Avoid lotions and dressings, other than to dust the part night and morning with boracic powder.

Many varieties of small pox occur. A case of medium intensity will be described.

The disease has five stages—(1) Incubation. (2) Warning symptoms. (3) The eruption. (4) Formation of matter in the Pustules. (5) Drying of the Pustules going on to peeling.

1. **Incubation** twelve days. Then appear the

2. **Premonitory Symptoms** :—(1) Intense backache, usually in the loins. (2) Severe frontal headache. (3) Vomiting, which is also fairly severe.

A combination of these signs with (4) a rapid rise of temperature even up to 104° F. to 105° F. is diagnostic of small pox. Then the first rash appears, which is a redness appearing especially on the front of the thighs and legs, and back of the arms, with a ring of redness just above the wrists and ankles. With the development of the rash the temperature falls. This lasts a few days, then the

3. **True Eruption** appears, *i.e.*, after 48 hours fever, definite small spots which can be felt like half-buried small shots in the skin, about the margin of the *scalp and forehead*, back of wrists, and then on most parts of the body, even in the mouth and nose. Least obvious on the abdomen.

On the third day the spots become blisters.

On the fifth day they are the size of a pea, and have a red area around.

4. **Suppurative Stage.**—On the eighth or ninth day matter has formed in the blisters, the face is swollen and indistinguishable.
5. **Drying.**—On the eleventh or twelfth day scabs begin to form, and on the twenty-first day begin to fall off.

Quarantine.—Till every trace of peeling, even from the feet, has disappeared, the patient must be isolated.

Persons who have been exposed should be quarantined twenty-one days.

Note.—If vaccination be performed within forty-eight hours of exposure to infection, protection will probably be successfully afforded.

If within seventy-two hours the Small pox will be modified. Later Vaccination is ineffectual. "It will not take." The disease is very fatal to infants under five years of age.

Treatment.—Immediate isolation (page 170) of the case with vaccination of all in contact and the nurse in charge.

Cut off the hair and beard. Darken the room, or put up dark *red* blinds or curtains. Give a mild purgative.

Diet.—Nutritious fluid diet. To relieve the thirst, plenty of drinks may be given or ice may be sucked.

The throat may be sprayed with a carbolic lotion (a teaspoonful to a pint of water) frequently.

Applications to the face are to be avoided, but to relieve the intense itching and irritation apply warm lead lotion (page 216) frequently, or eucalyptus vaseline.

If sleepless, give bromide of potash 20 grains (1·3 gram.) in a little milk. If the fever continues above 103·5° F. sponge (*see* page 168) the body once or twice daily.

CHICKEN POX

Is always present during epidemics of small pox. It may occur without such epidemics.

Incubation ten to fifteen days.

The Onset is gradual with slight headache, lassitude, or chill with slight fever.

Rash.—In a few hours the rash appears first upon the back and chest or upon face and forehead.

It appears as rose-coloured spots, either few or numerous.

In 24 hours these become blisters (in small pox blistering on the third day), which are small, but increase in size, and gradually become turbid. On the second day they attain their greatest size, and on the third day they may form matter, usually they burst or dry up and form scabs. The patient may become extremely ill, but usually the disease is mild.

Quarantine patient till every trace of peeling has ceased. Those in contact must be isolated 21 days.

Treatment.—Isolation (*see* page 170), careful nursing (*see* page 168), avoidance of chills, and too early exposure.

Prevent the child scratching the pustules. For the itching apply warm lead lotion frequently (page 216).

GERMAN MEASLES.

Incubation ten to twelve days.

Onset insidious and mild. There is aching of the limbs, slight headache and giddiness. Rarely a chill or sore throat for twelve hours.

Rash.—Then the rash appears. In many cases the rash may be the first sign of the disease, and is accompanied by fever. It begins on the face, and extends in 24 hours to the body. It consists of slightly raised spots of a pinkish red colour. It is patchy, more coarse than the rash of measles, and it usually persists three or four days, and then slight peeling occurs.

The glands along the back of the neck are swollen and tender.

Quarantine patient ten days after the disappearance of the rash. Those in contact 20 days.

Treatment.—Isolation (*see* page 170), and general treatment for one week, as for fever (*see* pages 171-173), generally. Then patient may be allowed to get about.

YELLOW FEVER

Especially prevails around the West Indies and Gulf of Mexico. The hot season, the seaside, cities badly drained and ventilated, places devoid of sunlight and fresh air, humid and low-lying districts are the haunts of yellow fever. Avoid basements to sleep in if possible, select a residence at a high altitude, and do not go out at night into slums and native quarters. The disease is conveyed through mosquito bites (*see* Malaria, 192).

Signs.—An attack usually begins suddenly in the early morning with headache, severe pains in the back and limbs, and chilliness. Then fever sets in with vomiting and slight jaundice (yellow colour of skin).

The face is peculiarly flushed, the eyes are red, and the eyelids and lips swollen. The favourable cases end in two or three days by gradual cessation of the symptoms and fall of temperature.

In severe cases, at the end of two days, the temperature rises; vomiting of dark blood—black vomit—may occur, and death result.

Mentally, even in severe cases, the patients are peculiarly alert, and in a state of terror.

Treatment.—Careful nursing and dieting (page 173) give the greatest hope. *Immediately* the headache and pains appear give two ounces of castor oil (56 c.c.), but do not repeat it. Also give a hot bath or repeated mustard and water foot-baths, taking care to keep the patient wrapped in blankets. Put a mustard poultice over pit of stomach.

MALTA FEVER,

Rock Fever, Neapolitan Fever.

Signs.—Irregular attacks of fever, pains and swellings in the joints and muscles, like rheumatism or neuralgia, with intense sweating. The attacks last a few weeks, and reappear after intervals. It attacks young and healthy adults, and begins with lassitude, headache, and general feeling of "out of sorts."

Prevention.—Avoid towns, especially during summer. Boil all drinking water, and maintain good general health.

Treatment.—Give a mild purge. Keep in bed on fever diet (*see* page 173). Do not give drugs except occasionally, 5 grains (.3 gr.) antipyrin for the headache. If the temperature rises over 100° F., sponge (page 168). Get patient out of the district as soon as possible, *i.e.*, during a period of quiescence, but not into a very cold climate.

Give plenty of drinks, especially lime-juice, to prevent scurvy. Use flannel clothing to avoid chills from draughts. The disease may reappear even in England.

DENGUE,

Dandy fever, break-bone fever, a fever common in the tropics, accompanied with pains in the joints and muscles, and a rash like that of measles. It is very infectious, therefore strict isolation is necessary.

Signs and Symptoms.—The onset is very sudden, thus :—Sudden fever and chills, with bad headaches and intense pains in the joints occur. Temperature is high, 105-107° F. There is a slight red rash on the skin and marked duskeness of the face. Patient feels tender and sore all over, the pain is worse in the joints, but may be present anywhere. The joints swell and look inflamed like rheumatic joints. The bones ache intensely, hence the name. An attack lasts three or four days, then subsides, and may again come on after an interval of one or two days.

Treatment as for fever (*see* page 173). Quinine is given to prevent the attacks. The after-treatment of stiffness in the joints and muscles is conducted in the usual way, *i.e.*, passive movement, and massage with Elliman's (pages 13 and 49).

Tonics must be given, and the health generally built up.

TYPHOID OR ENTERIC FEVER

Is more prevalent in the autumn, and affects those especially who are between 15 and 25 years of age. It is almost invariably conveyed through contaminated drinking water, and is an invariable accompaniment of bad sanitation, especially affecting armies and caravansera.

Incubation usually 10 to 14 days, may be longer, during which the patient feels more or less out of sorts, but nothing definite is complained of.

Invasion is most insidious as a rule, and requires for the early detection of the disease skilled observation. Occasionally a sudden onset may occur with severe headache, or diarrhoea and vomiting, or an attack of bronchitis. Usually, however, *lassitude and headache getting worse and worse daily*, loss of appetite, pain in the back, nose bleeding, alternate chills and flushes of heat, constipation or diarrhoea occur.

Rash about the seventh day, a few raised rose-coloured spots which disappear soon, may be observed on the abdomen.

Progress.—The usual course of the disease lasts four weeks; by the tenth day the patient is obviously seriously ill, and shows signs of fever (Asthenic Fever, page 172). In the second and third weeks the condition may become that of Asthenic fever (page 172).

In the fourth week in favourable cases improvement begins, convalescence lasts two to four weeks.

Relapses and complications may occur.

Quarantine patient at least two weeks after convalescence. Persons in contact three or four weeks after exposure to infection.

Treatment chiefly consists in careful nursing and dieting. Prevention of spread of the disease is one of the most important points, hence careful attention must be paid to the disinfection of the excretions, both fæces and urine, bed and body linen. The thorough boiling of all drinking water is essential.

All that has been written on nursing, the sick room, prevention of bed sores, and dieting applies essentially to typhoid. (*See* pages 166-173.)

The diet will consist of milk and beef tea, with abundance of fluid. Regulation of the bowels by varying the quantity of beef tea or by enemas. Never give purgatives.

Scrupulous cleanliness to the person and surroundings of the patient is imperative. Frequent sponging may be necessary, and cleansing the mouth and teeth affords relief. After every evacuation of the bowels the patient must be carefully cleansed.

MALARIA, AGUE

Is due to a parasite introduced into the blood of human beings, through the stings of certain mosquitoes.

Prevention.—The infection by mosquitoes seems only to occur at night, especially just after sunset, and just before sunrise, hence if a person living in malarial districts can, by mosquito nets, exclude the insects at night he may escape infection.

Therefore live in a mosquito-proof house or tent, *i.e.*, one protected by wire gauze mosquito curtains over doors and windows, and if possible surrounded also by a fence of such wire gauze ; or under cover of mosquito nets well before sunset, and do not leave such protection till well after sunrise. Failing this, the taking of quinine in two grain ($\cdot 15$ gram.) doses three or four times daily every other week, or 15 grains (1 gram.) once or twice a week will protect to a great extent.

Avoid swamps, puddles, decomposing vegetation, low-lying hot valleys, the natives and their quarters—these all harbour the mosquito. Villages are more infected than cities or towns. Avoid any excavations which may be going on. A district with a low temperature (cold) is more healthy than one with a higher temperature, the elevated districts are good residentially on this account.

In selecting a place of residence in a malarial district, choose a high altitude, at a distance of half a mile or more from native quarters. If possible dispense with young native servants, and do not allow native children in the neighbourhood of the house. Domestic cleanliness, frequent dusting inside and out of cupboards and hollow vessels, curtains and hangings, the destruction of old and useless articles, drainage of pools, hollows, cellars and stables. The destruction of rank vegetation, and any tendency to jungle

growth. The employment of wire gauze mosquito curtains over all points of ventilation, etc.

Patients suffering from malaria should be isolated (*see* page 170), and exit from, and access to their rooms by mosquitoes prevented, and all such as gain access to the patient's room must be destroyed. Do not harbour rubbish inside or outside the house.

The Signs of Malaria consist of "warnings" of a certain nature followed by a *rigor*.

The *warnings* are headache, lassitude, loss of appetite, general uneasiness, aching all over, occasionally vomiting, and chilliness down the spine. They may not occur in some cases. Then the *rigor* comes on. It has three stages.

1. *The cold shivering stage* lasts an hour. There is chattering of the teeth, and shivering all over, with feeling of great coldness. The skin is cold and blue, and the face shrivels. In children convulsions occur. The patient covers himself with all the clothing he can get hold of. Vomiting may set in. Temperature 100-101° F.
2. *Hot stage*. Gradually he feels warmer, flushes of heat first occur, at last a feeling of intense warmth. Face is flushed. He feels most uncomfortable and throws bed-clothing off. Every sign of fever (*see* page 171) is present, the temperature rises to 104-106° F. He has intense headache, and vomiting is frequent. This lasts three or four hours.
3. *Sweating stage* begins. Profuse perspiration soon occurs, the temperature falls. Thirst, headache and other signs disappear, and in two or three hours he feels quite well except a little weak and tired.

This ague fit occurs periodically every 24, 48, or 72 hours according to the variety of the disease, unless quinine is taken. Even when taking quinine, a second fit may occur, but it will be very slight, and then no more attacks occur, until the subject becomes generally run down again. Attacks usually appear between midnight and mid-day.

The malignant (severe) forms may appear like an apoplectic stroke, or with intense vomiting and shock, or bleeding from nose, mouth or rectum.

Treatment.—During the cold stage apply heat, by blankets and hot-water bottles, and give hot drinks—non-alcoholic.

In the hot stage, if temperature is very high, *i.e.*, above 104° F., cold sponging may be performed, but it is not absolutely necessary.

See the patient does not expose himself too suddenly, else a chill may result.

As soon as the hot stage is over and sweating begins, give quinine, ten grains (.65 gram.) in a tablespoonful of milk, once. Then five grains (.3 gram.) every six hours for three days. At the same time, as the first dose of quinine, give two teaspoonfuls (8 gram.) of Epsom salts in a tumbler of hot water, and keep the patient in bed.

For the following two weeks, give three grains (.2 gram.) of quinine three times a day. Then a tonic of iron and arsenic for some weeks. In the severe forms of malaria, give stimulants with quinine, without waiting for sweating stage. If diarrhoea be present give quinine, with five drops (.3 c.c.) of laudanum to every dose.

Should vomiting prevent the patient retaining the quinine, increase the dose, and give it in a small enema of peptonised milk (*see* page 162). Apply Elliman's sprinkled on hot flannel over the pit of the stomach to check the vomiting. (*Malaria—Sanitary Instructions, pages 236-239*).

DYSENTERY

Is very common in tropical and sub-tropical climates. Various forms exist, according to the nature of the microbic cause.

Causes which make one liable to attack are indigestion from dietetic errors, especially those due to bad or unripe fruit.

It is more common in summer and autumn, and following sudden changes of temperature. Also to the proximity of stagnant water, and as the result of campaigns and over-crowding. The actual cause is some peculiar micro-organism.

Signs.—Sudden diarrhoea, perhaps slight at first, which always becomes more copious, and then intermittent, *i.e.*, getting better and worse. There is usually a little colic, not always, slight fever, gradual loss of flesh.

At first a good deal of slime is passed, often with blood, later the stools are peculiarly watery. Considerable straining and griping of the rectum and anus may be present.

In severer forms the most intense symptoms of diarrhoea are found, with high fever and great prostration, intense colic, and rapid termination in death. Blood and slime in large quantities may be passed.

THE CHRONIC FORMS give rise to irregular diarrhoea, with frothy stools containing slime and slight traces of blood.

An attack of diarrhoea may be followed by constipation which is again followed by diarrhoea, and so on with passage of small hard masses of fæces, and much slime and undigested food. Indigestion, flatulence, loss of flesh, weakness and anæmia, etc., result.

Treatment.—Dietetic: whey, milk, broths, and all easily-digested foods, as in diarrhoea. Rest in bed with warmth to the abdomen.

Drugs.—Give half-an-ounce (15 gram.) of Epsom salts in a little hot water to produce free purgation, followed by one teaspoonful (4 gram.) three or four times a day until copious watery stools, free from slime, and marked diminution of the pain and straining result. This is to be kept up for at least three days, and with at least three stools a day, then occasional doses of salts daily to maintain the free action of the bowels, with low diet.

In the chronic form, dieting, and injections of various drugs, especially small quantities of nitrate of silver and other antiseptics in water enemas, is the routine treatment. The simple water enema alone may be usefully employed and requires less skilled attention.

The griping pain in the belly is greatly relieved by hot flannels sprinkled with Elliman's.

The pain in the rectum is best relieved by a starch and opium enema :—

Starch and Opium Enema.—Make some starch solution by stirring ordinary starch in the usual way with *boiling* water. When lukewarm take two ounces (56 c.c.), and add to it half-a-teaspoonful (2 c.c.) of laudanum and inject gently with a rubber syringe into the rectum.

SPRUE.

Tropical diarrhœa or Ceylon sore mouth.

Causes.—Residence in an infected area. Any form of debilitating disease or intestinal disorders may end in sprue, *i.e.*, are predisposing causes.

Symptoms—

1. Soreness of the mouth—a raw bare condition of the tongue and throat.
2. Looseness of the bowels, with pale yeasty fluid stools, worse in the morning.
3. Distension of the abdomen, with dyspepsia, etc.

Treatment.—First give a purge of castor oil, and until it acts give no food, but send patient to bed, keep him warm, make him wear a flannel binder over the belly, and keep the room warm, but well ventilated.

Then give nothing but milk, about three pints (1800 c.c.) daily at first, in sips or very small feeds, often. In a week the stools will be more solid, the soreness of the mouth will have disappeared or become less.

Now gradually increase the milk until five pints (3000 c.c.) are given daily, and for six weeks from the time the stools become solid, and the soreness of the mouth disappears, no other food or drink than diluted milk is to be given. Then go on to eggs and milk, a little arrowroot, thin bread and butter, chicken broth, and so on, very gradually resuming solid food.

If the amount of milk cannot be digested plain, it must be diluted with mineral or boiled water, or half peptonise it. If symptoms still persist, discontinue milk for a week, give raw meat juice (page 162) and albumen water only (page 163). Use frequently a mouth wash of one teaspoonful of chlorate of potash, to a pint of water.

SCURVY

Is due to an absence of fresh vegetable juices and meats.

Its main symptoms are great weakness, anæmia, swelling and bleeding from the gums and other parts of the body ; swelling of, and pain in, the legs and feet.

It begins with weakness, and then the gums swell. The teeth loosen and fall out in bad cases. Blood-stained patches appear

under various parts of the skin ; and nose, mouth, and bowel bleeding occur.

Treatment and Prevention.—Give lime juice, two to four ounces (56 to 120 c.c.) in water, or fresh vegetables daily. A varied diet. *Potatoes*, cabbage, lettuce, are good. Begin the change in diet gradually if an attack be present, and increase the quantities of lime juice and vegetables daily. Give fresh meat juice, broths, or finely minced fresh meat. Avoid salt food.

Use a mouth wash of weak carbolic lotion, half-a-teaspoonful (2 c.c.) to a pint (600 c.c.) of warm water, and give enemas (page 202) for the constipation. Keep at rest in bed. Apply warmth. If a wound develops, treat antiseptically. (See page 120.)

BERI-BERI

Is a form of paralysis affecting the nerves, attacking those especially who are much indoors. Children and old people are practically exempt. Prisons, asylums, ships, mining camps, and such like crowded dwelling or communities, in hot moist climates, are the favourite locations of the disease. It has developed occasionally in asylums and prisons in Great Britain.

Prevention.—Avoid over-crowded and damp, heated, close places, do not sleep too close to, or on the ground. Do not get run down in health. Boil the drinking water. Do not get wet and avoid eating bad rice, and do not take too much fresh fish food. Secure good ventilation, and reside if possible on high ground.

Signs.—Two forms exist, one the thin variety, the other the dropsical or fat. In both a cold is complained of, and is soon followed by pains in the limbs of a shooting character. Then weakness of the muscles, going on to paralysis and wasting. The patient cannot feel distinctly when touched (sense of touch diminished), yet the skin is very tender, any pressure resulting in pain (sense of pain acute).

He has shortness of breath, cannot bear exertion, and may have palpitation. Then in the dropsical cases, the legs and body swell, and the patient becomes flabby and bloated ; he is subject to faints on the slightest movement.

Treatment.—Removal from evil surroundings is essential to cure. Give good nourishing diet. A mild purgative, and in feeble

cases a little stimulant. Good warm clothing and rest in bed. When the skin is less tender, massage with Elliman's (page 13) for the improvement of the muscles and nerves.

MADURA FOOT

Is a condition of slow formation of abscesses (especially in the foot, but a similar condition may affect the hand and elsewhere), which burst and leave discharging tracts.

Treat as for Wounds.—Also using antiseptic fomentations (page 87), and syringing the abscesses with dilute Elliman's, one part to two of water, twice a day. The only cure is operation by amputation.

For many of the skin diseases of hot climates, sulphur ointment or painting with iodine effects good results.

SUNSTROKE AND HEAT STROKE.

These are not the same conditions.

Sunstroke affects people when working hard and exposed directly to the sun's rays, and especially attacks alcoholics.

Heat Stroke affects stokers and others working in very hot temperatures, although not exposed to the sun's rays. It may occur at night, and therefore cannot be due to the sun's rays.

Signs and Symptoms of Sunstroke.—The person suddenly falls as if struck with a paralytic stroke, and death may occur at once. Usually the patient experiences slight dizziness, feels oppressed and sick, then falls down, loses consciousness, the face becomes flushed, skin hot, pulse and respiration quicken, temperature is high, 106° to 110° F. Deep snoring, and perhaps twitching of the face and other muscles may develop.

Treatment.—Reduce the temperature as rapidly as possible, using the cold bath, ice to the head, sponging, and antipyrin. Rest, careful nursing, dieting, and gentle purgation is all that is required subsequently; but rest and quietness are essential for some weeks after the attack.

In Heat Stroke just the reverse occurs. The body temperature is below normal, patient is prostrated, very feeble and collapsed (*see* page 110), sometimes delirious.

Treatment.—Stimulants, warmth in bed, or hot bathing (*See Shock*, page 110). The succeeding weakness must be treated by careful dieting and rest.

ASTHMA

Is due to so many causes that its treatment demands as a first essential a recognition of such cause.

Causes.—Purely nervous, climatic, nasal, bronchial, liver and stomach disorders, gout, also foul odours or unpleasant sights, stuffy rooms, imperfect development of the chest.

Treatment.—If due to defective development, breathing and expansion exercises are indicated.

The dietetic treatment varies with the individual, but in all cases the patient should avoid late dinner, so as to prevent abdominal distension before retiring to bed. Hence a mid-day dinner, with fluid diet for the rest of the day is advisable. Avoid excess of starchy food, and select only the most digestible articles of diet. An occasional brisk purge is beneficial.

Climate.—A dry atmosphere is almost always preferable, but residence in town or country affects patients differently, experience will prove which is most suitable. Certain spas are beneficial. Woodhall in England, and Salsomaggiore in Italy especially so.

During the Attack some form of asthma powder, when its fumes are inhaled, usually affords relief.

These mostly contain some form of stramonium leaves with saltpetre. Place a pinch of powder on a plate, set light to it and inhale its fumes through a paper cone held over it. Asthmatic cigarettes are useful. Inhalation of chloroform vapour almost always cuts short an attack, but should only be used when ordered by a doctor. The chloroform is now sold in definite quantities in glass capsules, one of these is placed in a small handkerchief, and broken, and the vapour inhaled. Avoid draughts. Treat any form of chest trouble suitably.

CONSTIPATION.

Is usually preventable.

Causes.—

1. Dietetic. Too concentrated food, or foods too easily digested, especially milk, leaving little residue to excite the bowels to act.

Insufficiency of fluids making the residue too hard and dry, which so highly excite the bowels as to eventually tire it through excessive stimulation.

2. Sedentary habits and want of exercise, often associated with No. 1.
3. Indigestion and torpidity of the Liver with deficient amount of secretion of bile and other digestive juices.
4. Too frequent drug taking, *i.e.*, constant use of purgatives, in endeavouring to correct the conditions while neglecting the causes ; also other causes.

The Effects of Constipation are important and numerous, and are partly due to pressure upon the vessels and nerves, anæmia (bloodlessness), piles, varicose veins, varicocele, prolapse or descent of the lining of the rectum, sciatica, rupture, through straining, colic, fever, ulcers in the bowels which may cause peritonitis and appendicitis or inflammation of the " Pocket Bowel," etc.

Treatment.—First correct the diet. If too much animal food is indulged in and too little vegetable food, eat less butchers' meat, and instead eggs, poultry, fish and game should be taken, also more boiled or fresh vegetables, such as lettuce, spinach, endive, seakale, asparagus, celery, peas, beans, watercress, cauliflower (not avoiding the well-cooked stems), tomatoes, onions, etc.

Ripe fruits of all kinds should be taken regularly. Prunes, figs, bananas, grapes, stewed pears and apples are especially good. Avoid anything which from experience causes indigestion.

For Breakfast porridge well cooked. Brown bread substituted for white and eaten with marmalade. Bacon and other fat, such as butter, are beneficial. The fluids should be increased. Half-a-pint (300 c.c.) of cold water should be taken slowly (sipped) before breakfast, *i.e.*, while dressing, also on going to bed at night. A tumbler of hot water may be sipped after dinner. Ripe fruit before breakfast instead of water ; in some cases coffee, cocoa, or tea with milk half a pint or more.

For Dinner.—Gieshubler, Salutaris, Apollinaris, or Seltzer Water. If stimulants be preferred a good wine may be taken, or better some light laager beer. All drinks at meals should always be sipped. The fluids should be taken only during the latter

part of, or immediately after, a meal ; in this way they interfere less with the digestive juices of the stomach.

The Habits of Life.—Moderate exercise should always be taken, preferably in the open air, but if not convenient, gymnastics may be performed indoors ; golf for elderly people ; walking is beneficial for all. For the young any form of exercise if not too violent ; if free perspiration be induced the intake of fluids must be increased.

Attention to the natural desire to unload the bowel whenever it should occur. At a regular hour daily an action of the bowel should be elicited, preferably soon after breakfast or before retiring at night.

Avoid tight clothing about the abdomen, which prevents free movement of the intestine. But in very stout people a good elastic abdominal belt is an advantage, supporting the weak muscles and making locomotion more comfortable.

Massage of the Belly daily (page 13) for about 20 minutes, rubbing, tapping and kneading, at first gently and then firmly and deeply, ending by following the line of the big gut, *i.e.*, beginning on the right side low down, passing directly upwards to the ribs, then across the belly just above the navel, then down the left side (*see* fig. 46, page 114). A good plan is to roll a metal ball—shot or other suitable body—about 4 to 6 lbs. (2 to 3 Kgm.) weight about the abdomen for 5 or 10 minutes every morning.

Parents should instil into their children the virtue of regular habits.

Alternate douching of the abdomen with hot and cold water excites the bowel to activity, and if a vigorous application of Elliman's be then made the abdominal muscles are greatly improved in vigor.

Treatment of the Loaded Bowel.—The misuse of purgatives is especially mischievous in habitual constipation. Patients constantly take powerful pills which relieve the bowel for a time, but does not prevent re-accumulation, and increasing doses are necessary to effect relief. Or they take salines daily which wash out all the fluids of the intestines but leave the solids behind. Both methods are equally injurious.

Where possible laxatives, *i.e.*, weak purgatives should be taken, but as they are at first unable to relieve the loaded bowel the following may be taken :—

Aloin	-	-	-	-	-	$\frac{1}{2}$ grain (3 to 4 Cgm.)
Calomel	-	-	-	-	-	1 „ (6.5 Cgm.)
Extract of Belladonna	-	-	-	-	-	$\frac{1}{2}$ „ (3 to 4 Cgm.)

Make into a pill to be taken at bedtime, follow in the morning by a Seidlitz powder or other saline.

The dose to be repeated every other night for a few nights, or instead take :—

Mercury Pill	-	-	-	-	-	3 grains (.2 gm.)
Colocynth Pill	-	-	-	-	-	5 „ (.3 gm.)

Make into a pill to be taken at bedtime ; follow by a tumbler of Carlsbad or a Seidlitz powder in the morning. This is a useful pill for those who live freely.

This, combined with the previous directions, will usually start relief of the constipation ; but in severe cases, injections, *i.e.*, enemas have to be used regularly and are better than purgatives.

ENEMAS.

1. Enemas may consist of 1 to 1½ pints (600 to 900 c.c.) of tepid water with or without soap. For children $\frac{1}{4}$ to $\frac{1}{2}$ a pint (150 to 300 c.c.).
2. A pint (600 c.c.) of cold water with 1 teaspoonful (4 gm.) Bicarbonate of Soda, or 1 dessert spoonful of Epsom Salts.
3. Half to 1 pint (300 to 600 c.c.) of Olive Oil, or
4. Half an ounce (14 to 15 c.c.) of Glycerine.

An enema can be self-administered. An enema can, tube and nozzle, with tap, is all that is necessary.

The can containing either one of the first three solutions should be suspended three feet above the level of the buttock, and the nozzle slightly lubricated with vaseline. The patient can then either lie on the left side or on the knees and elbows. The nozzle is then introduced and the tap gently opened.

The enema is retained for 10 to 15 minutes and then the bowel is unloaded.

This ensures a rapid and effective relief, the uncertainty of purgatives being avoided. The use of enemas is not sufficiently adopted in England.

Glycerine enema is given by a small rubber syringe ; it is not so effective as the others.

The daily use of an enema ensures unloading of the bowel, and by its use for a month or six weeks, combined with dietetic and general treatment will cure constipation.

An occasional pill as above may be taken or an enema may be used with benefit by a healthy person.

To aid the return of the bowel to a healthy state, and to present a mild purgative a dinner pill may be taken immediately after dinner daily, such as—

Aloin	-	-	-	-	1 grain (6.5 Cgm.)
Extract of Nux Vomica	-	-	-	-	$\frac{1}{2}$ grain (1.5 to 2 Cgm.)
Powdered Ipecacuanha	-	-	-	-	1 grain (6.5 Cgm.)
Extract of Belladonna	-	-	-	-	$\frac{1}{2}$ grain (1.5 to 2 Cgm.)

Make into a pill and take one or two daily after dinner.

If there be Anæmia take

Aloin, $\frac{1}{2}$ to 1 grain (3 to 4 Cgm.) according to effect on the bowel.

Extract of Nux Vomica	-	-	$\frac{1}{2}$ to $\frac{1}{2}$ grain (1 to 2 Cgm.)
„ Belladonna	-	-	$\frac{1}{2}$ grain (3 to 4 Cgm.)
Sulphate of Iron	-	-	2 grains (13 Cgm.)

Make into a pill and take three times a day.

Other Laxatives are—

Extract of cascara sagrada in liquid or in the form of pills and tabloids, liquorice powder, tamar indian, confections of sulphur and senna.

Do not take one laxative as a routine, vary them.

BILIOUSNESS.

So-called, is a condition in which the liver is over-loaded with bile. It is often associated with defective eyesight, and is frequently due to constipation. Treat the eyesight and constipation and the biliousness should disappear.

Symptoms are feeling of weight and heaviness, and intense depression, violent headache, and other signs of constipation.

In addition the complexion is muddy or sallow, the white of the eyes slightly yellow, and they look heavy and dull.

Vomiting is a very frequent symptom, and consists of bile-coloured contents of stomach or even pure bile, usually with painful retching.

There may be sense of weight or tenderness in the right side over the liver.

The attacks are nearly always periodical, occurring once a fortnight or every month or so.

Treatment.—Prevention as in constipation. Have the eyes seen to, avoid over-study or too close eye work during attack. Rest, abstention from solid food. A hot fomentation sprinkled with Elliman's over the pit of the stomach often relieves the discomfort and allays the vomiting.

Take the following pill at bedtime—

Calomel	-	-	-	-	2 grains (.15 gm.)
Colocynth and Hyoscyamus Pill	5	..			(.3 gm.)

with a saline in the morning; or podophyllin pill, or compound rhubarb pill, or 1½ to 2 ounces (40 to 60 c.c.) of tincture of rhubarb.

Massage with Elliman's over the upper part of the belly is very beneficial during the intervals.

MIGRAINE. SICK HEADACHE.

Causes.—It is often hereditary. A gouty or rheumatic tendency. Eye defects, short sight and squint, indigestion, mouth breathers, chronic Bright's disease, and sluggish livers are common causes.

Attacks may be brought on by excitement, foul odours, or sickening sights, fatigue, over exertion, bad lights to work or read by, over-feeding, want of sleep.

Attacks may occur at regular intervals of two or three weeks.

Signs.—Peculiar zig-zag lines, spots, or visions of animals, etc., may be seen. This is followed by severe headache, perhaps beginning in a localised spot, about the eye or temple and gradually spreading, usually over one side only, but both sides of the head may become affected. Vomiting or retching is common. The head is hot; blindness may persist during the attack. There is no fever. Intense prostration is experienced.

Treatment.—Avoid or cure the cause of attack. Attention to bowels and feeding is most important. Have the eyes examined. If anæmic give suitable treatment by iron. Antipyrin and citrate of caffeine of each five grains (·3 g.m.) may be taken in a little water every three hours during an attack, or a cup of hot coffee often affords relief. If vomiting does not occur give an emetic of salt and water or mustard and water.

Gentle massage by stroking of the temple has proved very efficacious. Rest in a darkened room and quietude is grateful.

DIARRHŒA.

Causes in children. It mostly affects artificially-fed babes, and during the period of dentition, 6 to 24 months.

1. Improper feeding and food. Too coarse or irritating food and excess, especially of unripe fruit, also tainted milk, bad meat, fish of various kinds, starchy foods given too early (*i.e.*, before nine months).
2. Changes in the weather, especially a sudden fall or rise of temperature in spring and autumn. Exposure also at any period may chill the intestines and cause diarrhœa.

The attacks vary greatly, from rather slight increase in the number of stools to sudden intense diarrhœa with great pain, abdominal swelling, vomiting and collapse, the child shrinking markedly in a few days. Sudden crying and drawing up of the legs is an invariable accompaniment of pain in the belly.

Treatment.—Preventive is to feed properly. If the stools contain undigested milk or are very foul, sour, or green in colour, give half to one teaspoonful (2 to 3·5 c.c.) of castor oil; this clears away any irritating materials, half to two grains (3 to 13 Cgm.) of Calomel may be better retained if the child be vomiting. It is best in severe cases to discontinue milk entirely, and give albumen water, raw beef juice, mutton or chicken broth (made like beef tea except that the broth is boiled instead of being allowed to simmer only) in small quantities frequently, that is to say even a teaspoonful (3·5 c.c.) every quarter or half hour when the child cannot or will not take more. But it is generally sufficient to feed every two hours, giving one, two, three tablespoonfuls at a feed. Or the

milk may be peptonised and diluted. Overfeeding is recognised by the condition of the stools containing curds.

Lime water, plain water, and whey may be given, and especially if there be much vomiting and irritability of the stomach.

Given in small quantities frequently, various foods and drinks may be retained, whereas if quantities be increased vomiting would ensue.

Rice Water.—Give freely as a drink the water in which rice has been thoroughly boiled. Four to ten drops (.3 to .6 c.c.) of good brandy, if necessary, may be given every two hours in a feed of albumen water or milk. Return to milk diet should be gradual, giving diluted peptonised milk first (*see* page 162), then undiluted, then diluted plain milk or the cream mixture if the child is very young. If over two years undiluted sterilised milk may be resumed.

Should the child be breast fed, a wet nurse must be employed when the mother's milk causes diarrhoea. If the vomiting is severe no food should be given by the mouth, only plain water, or albumen water and a little brandy. Albumen water with brandy has a very soothing effect, and is often retained when all else is rejected.

Repeated washing out of the bowel by means of a plain water enema (page 202), using half-a-pint (300 c.c.), often does good.

The child must be kept warm. It may be wrapped in cotton wool or wear a flannel binder round the belly.

In Chronic Diarrhoea a change of air to country or seaside, or sending the child daily into the open air if the former be impossible, clothed with warm but light clothing often cures the condition.

Diarrhoea in Adults. Causes—

1. Chiefly dietetic, especially over-eating and drinking.
2. Decomposing food, tinned meats, certain fish, poisons of various kinds.
3. Chronic Bright's disease, liver disease, etc.
4. Sudden chill.
5. As a result of constipation.

6. Nervousness, fear, etc.
7. Changes in temperature ; infection by foul water.
8. Dysentery, typhoid fever and other serious diseases.

Treatment.—Avoidance of any irritating foods or those leaving too much solids after digestion (*see* Constipation, pages 199-204), such as green vegetables, nuts, fruits, brown bread, fat rich dishes, indigestible meats.

Take boiled milk with soda or lime water. Arrowroot, sago, tapioca or ground rice, made with water and flavoured with a little nutmeg or cloves.

Egg albumen and clear soups, but do not give beef tea. A little brandy may be added. Peptonising the food may be required. A gradual return to ordinary diet after a couple of days cessation of the diarrhoea, resuming puddings, jellies, white fish and mince, and then chicken or mutton chop with a little boiled potato.

In chronic cases, diet still has to be carefully regulated : occasional enemas of soap and water are beneficial.

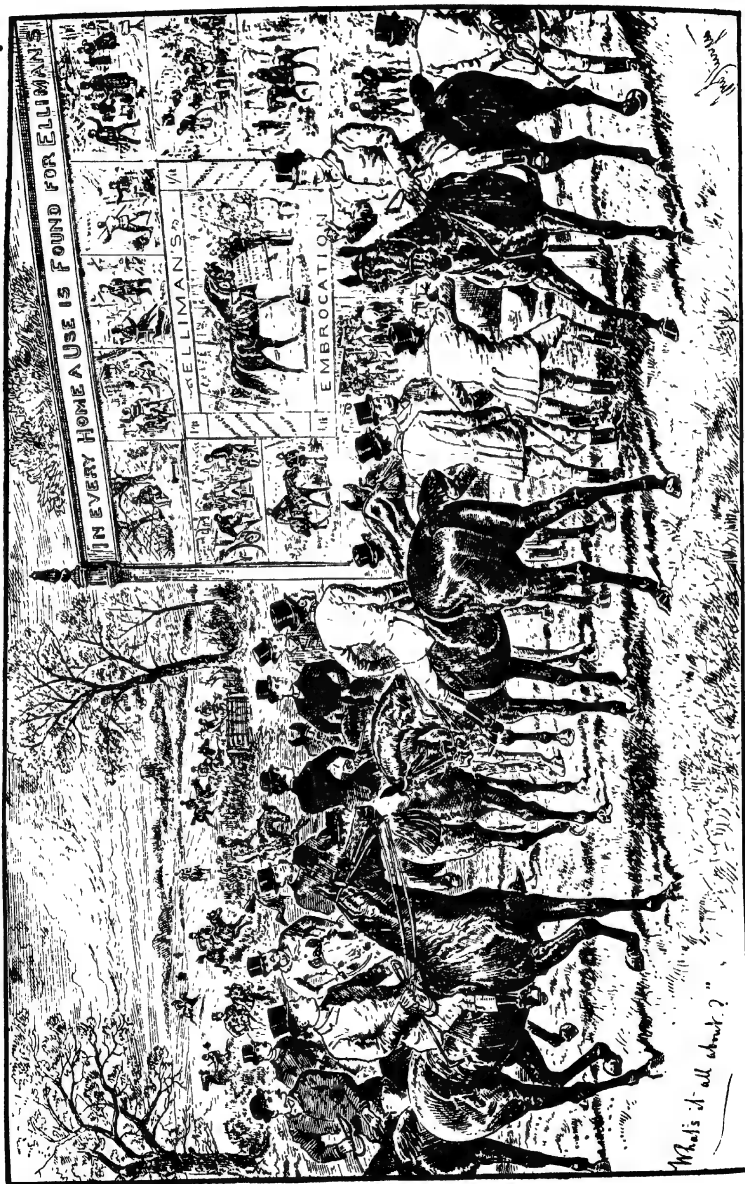
In all forms of diarrhoea warmth to the belly is beneficial, and relieves pain. Elliman's sprinkled on warm flannels comforts greatly and may help to check diarrhoea, and vomiting.

Rice carefully boiled in water, taken with a little salt as the only food for 48 hours, and the boiled rice water cold as the only drink often cuts short an attack especially when the diarrhoea is due to fruit or climatic influence. Drink plenty of the rice water when thirsty. This is a common remedy in Italy.

COLIC.

Colic is closely related to Neuralgia and is meant to include all painful affections of the intestines not due to inflammation, but affections of other abdominal organs give rise to similar pain, and may be mentioned here.

Note.—The onset of inflammation of the bowels from twists, rupture, knots of the gut, etc., is accompanied by acute pain like colic, so is the passage of kidney and gall stones *therefore intense or prolonged colic* should be a warning to obtain skilled advice.



In children it is most commonly due to flatulence from indigestible food, over-feeding, starvation from insufficient diet either by under-feeding or giving milk which is very poor in quality, whether human or cow's, also constant feeding with condensed milk.

Also worms, irritants (such as senna tea) or severe purgatives. There is usually constipation or diarrhoea accompanying the colic.

The commonest cause is cow's milk insufficiently diluted, causing big indigestible curds to form in the stomach.

Signs.—Soon after taking food the child is restless, kicks, seems in pain, draws up its legs, perhaps grunts or cries, with usually a sharp piercing scream. It becomes pale, returns its food as curd, or belches gas. Soon the process of digestion relieves it automatically by breaking up and digesting the big curds which are the cause of colic. If the child is constipated there is much straining, and hard, lumpy, perhaps a little blood-stained, stools are passed.

In other more severe forms, convulsions may occur, and intense prostration result.

Treatment.—Give a little dill water or cinnamon water. Employ gentle friction over the belly with Elliman's, or apply hot flannels, sprinkle a little Elliman's on the first applied. Keep the child warm. If there be great collapse give a few (10 to 20 drops (·6 to 1·2 c.c.) of brandy in a little warm water.

Should it be associated with constipation, a teaspoonful (3·5 c.c.) of good salad oil may relieve the pain and relax the bowels. Otherwise administer an enema (page 202) or give half to one teaspoonful (2 to 3·5 c.c.) of castor oil.

Imperfect clothing causing chill should be avoided. Add one teaspoonful of dill water to each feed of milk, if the child habitually suffers from flatulence and colic.

Prevention.—Cow's milk is usually given too concentrated. For a very young child one part of milk to two parts of water (either lime water, if the child be relaxed, or barley water if constipated) is quite strong enough. A little sugar and cream should be added. It should be fed every two hours (except at night when the mother should have at least six hours uninterrupted rest),

until it is six months old, then it should be fed five or six times in the twenty-four hours.

Colic in Adults. **Causes.**—Intestinal irritants, coarse, indigestible foods, over-eating, intense constipation, exposure to cold, lead poisoning, decomposing food, diseases of other abdominal organs, hysteria, and certain nervous diseases, rupture of the gut, appendicitis.

Signs.—Pain, either gradually developing with feeling of sickness and flatulence, or sudden and severe, doubling up the patient by its intensity. Situated chiefly at the navel and shooting round the abdomen. It is relieved by pressure (for this reason babies are easier lying on their bellies), and gets better and worse, *i.e.*, intermittent, often with moving of wind in the intestines.

The muscles of the belly are hard and knotted. There is always restlessness and twisting of the body. Some sweating may occur. Pain is relieved by an action of the bowels or vomiting.

Usually no fever is present except in children, in whom a little rise in temperature may occur. There probably have been previous attacks.

To distinguish between simple colic and inflammation of the bowels is most important.

In Inflammation there is fever, frequent pulse and respiration, rise of temperature, etc. (*See Fever*, page 171.) There is always thirst. Very slight pressure causes pain. Legs are drawn and kept up, patient is very quiet, very pale, and anxious. Vomiting almost constant. No previous attacks.

Treatment of Colic.—Relief is obtained by a large soap and water enema, or a dose of castor oil. Apply hot fomentations sprinkled with Elliman's.

Aromatic spirit of ammonia, half a teaspoonful (2 c.c.), or tincture of ginger or ground ginger in hot water may be given. A few drops of laudanum, 5 to 10 (3 to 6 c.c.), may be given to adults. An emetic, especially in children, will relieve an overloaded stomach.

In habitual colic treat the constipation (page 200) and attend to the diet. Avoid pastry, sweets, nuts, cheese and other indigestible food.

LEAD COLIC.

Causes.—The intake of lead in drinking water, cider or other beverages, such as lemonade syphoned through lead tubes, also lead in certain cosmetics, in adulterated food, flour, bread, cakes, etc., the taking of lead pills.

Plumbers, painters, printers, white lead workers, and smelters, all lead workers, in fact, are liable, but strange to say *not miners* of lead.

Signs.—Ordinary colic with *special* signs of lead poisoning is mostly seen. Sudden twisting or grinding pain to left of navel, with a sense of tightness of varying degrees, but generally intense. In this case extreme tenderness on pressure may be present, ordinarily pressure relieves the pain of colic.

Vomiting of a thick greenish liquid is very characteristic, but retching, or sense of loathing after the acute pain has passed is more common. There is constipation, diminution in quantity of urine. Night attacks and coming and going, *i.e.*, intermission of the pain is very common.

Other Signs of Lead Poisoning may be present.—Marked indigestion, distended abdomen, pallor, loss of flesh, metallic dry taste in the mouth, headache, muscular weakness, and especially dropped wrist, *i.e.*, the wrist seems paralysed. Obstinate constipation. A blue line round the gums, seen only if the mouth be not clean.

Treatment.—Prevention. The water supply should be examined. Avoid storage of water or other drinks in leaden tanks, but if unavoidable add two grains of carbonate of lime to every gallon of water. Workmen absorbing lead into the system in working at their trade, *should never take meals on the work premises*, and should always wash the hands and lips thoroughly before eating.

Respirators should be worn. At the first signs of poisoning, patients should stop work and be treated medically. Lead workers should never start work on an empty stomach, and they should be total abstainers from alcohol.

Drink Large Quantities of home-made lemonade, to which a little *dilute* sulphuric acid, one teaspoonful (3·5 c.c.) to a quart

(1,200 c.c.) of lemonade is added. Take half to one teaspoonful (2 to 4 gram.) of Epsom salts every third morning.

Treat the Colic as before (page 210), and especially give repeated large soap and water enemas (page 202), and Epsom salts or castor oil as purgatives.

COLIC FROM PASSAGE OF GALL AND KIDNEY STONE.

Gall Stone Colic is very severe and sets in suddenly with pain over the right side of the lower part of chest and upper part of belly, and shooting to the right shoulder. There is a rise of temperature. Usually vomiting and profuse sweating with shivering or chill may be felt. It may be followed by jaundice.

Treatment.—Immediately give a hot bath or apply hot fomentations (page 89) sprinkled with Elliman's, over the liver. Give by small mouthfuls, *i.e.*, sipping, two pints of hot water to which two teaspoonfuls (8 gram.) of carbonate of soda have been added. If this is vomited at first, persist, and the solution will soon be kept down. Send for a physician.

Massage over the liver and gall bladder will tend to prevent formation of gall stones.

Kidney Colic is also sudden, but the pain may be in either right or left loin. It usually shoots down into the groin or thigh. The other symptoms are similar to gall stone colic. Blood may appear in the urine, during or soon after an attack. There is frequency of micturition.

Treatment as for gall stones. Five grains (.3 gram.) phenacetin may be given to relieve the pain. Consult a doctor.

WORMS.

Tape worms, round worms, thread worms, are commonest.

Tape Worms. Causes.—The eggs of the worm chiefly eaten in contaminated pork.

Signs are those of slight colic, with diarrhoea and constipation alternately, indigestion, often a ravenous appetite, loss of flesh and pallor. The presence of portions of worm in the stools may be the only sign, and is characteristic.

Treatment.—By Male Fern Extract. For three days before

taking the remedy, the diet must be very light—milk puddings, fish, and such like invalid diet.

A laxative must be taken every day, but it must not be violent, else it will break up the worm, which should be expelled entire as until its head is expelled it will continue to grow.

Give, therefore, a dose of liquorice powder, or one teaspoonful (3·5 c.c.) of syrup of senna, or of confection of senna (4 gram.) at night, and a teaspoonful (4 gram.) of Epsom salts in the morning.

The evening before the dose of male fern is to be given, a very light tea consisting of a little bread and butter should be taken, and nothing after. Within three hours of this meal give a suitable dose of castor oil or calomel. For an adult, half to one ounce (14 to 28 c.c.) of castor oil or three grains of calomel. For a child in proportion.

On awakening in the morning give the dose of male fern. For a child half a teaspoonful (2 c.c.) of the liquid extract. For an adult two teaspoonfuls (8 c.c.).

It may be given made into an emulsion with tragacanth powder or white of an egg thoroughly beaten up in milk, to which a little peppermint has been added.

It must be followed in two hours by another purgative, which may be another dose of castor oil or Epsom salts, or for an adult one drop of croton oil on a lump of sugar.

Round Worms are found in weakly, neglected, or unhealthy children. The administration of salt in the food of children tends to prevent worms.

Signs.—Irregular appetite, colicky pains, foul breath, loss of flesh, the child does not “get on,” grinding of the teeth and disturbed sleep, bad dreams, picking the nose, itching, fingering of the anus, convulsions, worms in the stools.

Treatment.—The drug used is Santonine. It is best given fasting and as a powder or lozenge.

Give to a child over twelve months old two grains (13 Cgm.) of santonine and one grain (6·5 Cgm.) of calomel mixed, every other night for three nights. A good plan is to sprinkle the powder on a little bread and butter, and hide it with a little Demerara sugar. In the morning administer an enema, or a teaspoonful (3·5 c.c.) of castor oil.

The after treatment consists in giving a teaspoonful (3·5 c.c.).

of Parrish's Food three times a day, and attention to the general health.

Note.—The urine may become tinted yellow after *santonine*.

Thread Worms are from a half to one inch long, and are of the thickness of and look like pieces of white cotton. They should be sought for about the anus at night. As children scratch themselves to relieve the irritation, the eggs of the worms get under their nails and thus are carried to the mouth or nose, so re-infecting the intestinal tract.

The Signs and Symptoms are intense irritability about the anus, restlessness at night, wetting the bed, slimy diarrhoea, and prolapse of the rectum (falling down of the bowel).

Treatment.—Cold enemas of soap and water should be given daily and as much as possible without injury. For an adult three pints (1,800 c.c.) may be used in the elbow knee position (*see* Enemas, page 202). For a child, if over five years of age, half a pint to a pint (300 to 600 c.c.) ; if between one and five years, use quarter to half a pint (150 to 300 c.c.). Others prefer, and with reason, enemas of salt water, two teaspoonfuls (8 gram.) of table salt to the pint (600 c.c.) or infusion of *Quassia* chips, made by steeping a tablespoonful of chips for 15 minutes in a pint of cold water, then strain and administer cold. Enemas should be retained for 10 to 20 minutes.

The injections are best given at bedtime, and gentleness must be exercised as they will need repeating for several weeks in severe cases. At the same time give the *santonine* powder every third night (*see* Round Worms, page 213). For adults *santonine* four grains (.25 to .3 gram.) in a tablespoonful (14 c.c.) of castor oil every third night.

Lastly, smear the anus and adjacent part with white precipitate ointment at night and prevent the child scratching by tying its hands loosely or covering them with woollen gloves. Massage of the abdomen (*see* page 201) is very useful, helping to dislodge the worms and the mucus they live in.

Guinea Worm is taken into the body by drinking or wading in infected water. Eventually the worm gets lodged near the surface of the body under the skin, usually in the legs, and burrows a small hole in the skin. First a blister forms and later

an ulcer, which heals soon, and only a tiny hole is left in the skin. If a little cold water be gently douched over this hole a small drop of fluid, at first clear, then milky, will be expelled from it, or at times a portion of the worm is extruded. This is characteristic of the disease.

Treatment.—Gently and frequently douche the skin near the hole with cold water for five minutes for 15 to 20 days, until in fact no milky fluid is extruded. At the end of this time the worm will tend to protrude itself, and it may then be gently wound round a piece of wood and by twisting it gently and gradually a little every day, the whole worm may be extracted.

Do not be in a hurry. Never begin twisting the worm out until the milky fluid, which really represents the young of the worm has ceased to flow after douching.

The average length of a worm is 30 inches ; its diameter is a little over $\frac{1}{12}$ th of an inch.

The period of incubation is up to one year.

THE ITCH

(Scabies) is due to a small insect which burrows in the skin and causes great irritation. In some cases intense rash and small abscess formation in the skin results. The commonest parts attacked are the webs of the fingers and toes, but through scratching or by the clothes they may be transferred higher up the arms and legs or to any part of the body.

The burrows may be seen as little streaks with a dark dot at one end which contains the insect. Itching is intense and is worse at night.

Treatment.—The patient should give himself a thorough scrub with soap and water in a hot bath for half-an-hour. Then rub himself well for half-an-hour with sulphur ointment, put on clean night clothing and go to bed. In the morning clean uncontaminated underclothing must be worn, and the bath and application repeated for four days. The infected clothing must be thoroughly boiled or otherwise disinfected, else, when worn, they will re-infect the body. Gloves should be burned.

ITCHING from other causes than scabies.

Treatment.—In the local forms of itching keep the parts clean and dry, use a dusting powder (*see* page 170).

Applications for Itching affecting the whole body or large areas of skin.

Baths.—Plain and hot, or medicated with either—

Carbonate of Soda	-	-	-	-	$\frac{1}{2}$ lb (150 gram.), or
Creoline	-	-	-	-	1 tablespoonful (14 c.c.), or
Carbolic	-	-	-	-	1 tablespoonful (14 c.c.), or
Scrubbs Ammonia in an ordinary bath	-	-	-	-	1 tablespoonful (14 c.c.).

Lotions of *warm* lead and glycerine, one ounce of glycerine of lead (28 c.c.) to a pint (600 c.c.) of water ; or carbolic acid two teaspoonfuls (7 c.c.) to a pint (600 c.c.) of water are convenient, and may be frequently dabbed on and allowed to dry.

Ointments of Zinc, Carbolic, Peppermint and Camphor may be applied. Other remedies may be tried in turn till something is found to give relief. Attention to the diet, regularity of the bowels, and general hygiene should be seen to.

HEAD LICE.

Signs.—Marked itching, with scratch marks from the injury done by the nails, swollen glands in the back of neck ; skin eruptions, abscess and sore head may follow.

The eggs are called Nits and are most difficult to destroy. They resemble scales sticking to the hairs, but are distinguished by being firmly fixed around the hair like a ring, and can be made to slide up and down. A scale falls off easily. The back of the head is the favourite site.

Treatment.—When young children are affected, cut off the hair as closely as possible. Wash the head with soap and water, dry, then anoint thoroughly with an ointment of white precipitate. This kills all the insects, after one or two applications. If this be done at night, in the morning wash the head again. Dry thoroughly. Now dab the hair freely with turpentine to destroy the nits, and let it remain on for some hours, then wash off (else it may cause great irritation). Elliman's is equally efficacious, and may be substituted for the turpentine.

Vigorous use of the fine toothed comb removes the dead nits. See that a few do not escape and re-infect the head. Destroy caps, hats, etc., which have been in use. Caps of linen which can be destroyed should be made to wear under the usual headgear when treating skin diseases affecting the head.

SCURF OF SCALP.

Dandruff is probably due to some micro-organism. It is the cause of certain varieties of baldness and many skin eruptions, especially those affecting the chest, shoulders and arms. Patients infect themselves by first scratching the scalp, and then other parts of the body, or by combing the hair over bare shoulders.

In very young Children it forms a dirty, greenish, scaly layer on the scalp; this should be bathed off with water containing bicarbonate of soda, a teaspoonful to a pint. Then a little ointment, such as equal parts of white precipitate ointment and lard, should be rubbed in gently. This may be done after the daily bathing.

In Adults.—The scalp should be washed with the following—Of a mixture of equal parts of purified soft soap and methylated spirit, take two tablespoonfuls (28 c.c.) and add it to half-a-pint (300 c.c.) of warm water, and use as a hair wash, thoroughly rubbing the scalp and roots of the hair. Then dry with rough towels, using considerable friction to the scalp. An ointment is then applied to the scalp by rubbing it in gently, after separating the hairs. The most useful consists of either sulphur ointment, or white precipitate ointment diluted with equal parts of lard or vaseline. As sulphur darkens the hair,

Resorcin	-	-	-	-	-	5 grains (.3 gram.)
Vaseline	-	-	-	-	-	1 ounce (30 gram.)

may be used instead by women.

In the case of men, the treatment should be carried out every day. In women, as often as possible, three or four times a week preferably. The general health may need attending to.

Use a stiff hair brush frequently. Wash the brush every week with a little soda or ammonia water.

An innumerable amount of skin eruptions owe their commencement to dandruff.

A little greasy application should always be used after washing the scalp.

BALDNESS

is due to scurf, severe illness, ringworm, advancing age, etc. The early onset of baldness may be hereditary, but it certainly is associated with scurf.

(Continued on page 220.)

ADVERTISEMENT.

SPRAIN
OF THE
BACK



HUNTER GETS IT

TAKING OFF FROM STICKY GROUND.



THE DRAUGHT HORSE
WHEN STOPPING

A LOAD GOING DOWN HILL

See the FITZMAN E. F. A. BOOK (Treatment of Animals), page 243.

ADVERTISEMENT.

SPRAINED.
SHOULDER.



" YOUNG FARM HORSES WHEN FIRST PUT TO PLOUGH "



" GATES SHOULD BE SET WIDE OPEN
BEFORE COLTS ARE ALLOWED TO RUSH THROUGH. "

See the ELLIMAN E. F. A. Book (Treatment of Animals), page 253.

Treat the cause where known. Some varieties of baldness may be cured, others not.

To stimulate the growth of hair, friction to the scalp with rough towels, hair brush, etc., is useful. Use any stimulating application, such as ointments of sulphur, cantharides, and tarry derivatives. A good application consists of equal parts of—

Tincture of Cantharides,
Tincture of Capsicum.
Spirits of Ammonia and
Tincture of Jaborandi

applied with a tooth brush night and morning.

Note.—It may blister if applied too vigorously.

BOILS AND CARBUNCLES

Are found in hairy parts, being due to acute inflammation about the hair roots.

Causes.—Occupations of a dirty nature, dustmen, sweeps, scavengers. Occupations leading to much friction in any part, rowing men, porters, weavers, miners.

Excessive exercise from the same cause results in boils and carbuncles, scullers and cyclists especially suffer, horse riding not infrequently is followed by a crop of small boils.

Excessive eating and other causes connected with the digestion leading first to acne and then to boils. Certain serious diseases, especially Bright's disease, diabetes, and alcoholism are associated with boils.

The neck, shoulders, buttocks and back are commonest sites.

Blind Boils.—A boil may not come to a head. Thus after reaching a certain size it may stop growing, and then gradually disappear, this is called a "blind" boil. If possible try to convert all boils into blind boils. Usually, however, the boil comes to a head with the formation of matter (pus), then it should be fomented with an antiseptic (*see* Fomentations, page 87) to aid discharge of the core, when healing will soon follow.

Signs.—A boil is red and firm, conical in shape, and has a hair sticking from the top of it. It is very tender, more so than its appearance suggests.

Apply early firm pressure by means of a little strip of mercury or belladonna plaster; or a cold compress may be used.

A good plan is to use a piece of sticking plaster with a hole in the centre for the tip of the boil to protrude through.

Later, fomentations are used, but it is best to make them small, else crops of boils occur all round. A good plan is to apply a weak ointment (carbolic or zinc) around the boil under the fomentations.

Tonic Treatment with good nutritious food, except for fat or alcoholic persons who should be sparsely dieted and taken off alcohol. Attention to the bowels, and a tonic of quinine wine must be taken. Change to the seaside, and rest is desirable.

To Prevent Boils, take sulphide of Calcium, $\frac{1}{2}$ grain (2 Cgm.) as a pill three times a day, or sublimed sulphur one teaspoonful (4 gram.) in milk every morning.

Carbuncle is a collection of several boils close together, and is more severe.

Treatment the same as for boils. Remember that boils and carbuncles usually indicate that the patient is run down in health.

PILES

Are due to liver disease, constipation, sedentary living, and tumours in the abdomen. They give rise to moisture about the anus, itching, pain on passing stools bleeding, and prolapse of the anus, "bowel coming down."

Treatment.—Treat the constipation by laxatives (page 202) and enema (page 202), and maintain regular action of the bowels. If the bowel comes down, at once return it by applying pressure with the finger. Should this be found difficult apply a little vaseline, then bathe the part with cold water, or take a sitz bath, and press back firmly with a little lint or a small sponge.

For the Pain.—Smear with ointment of Gall and Opium, or Hazeline Ointment, gently insinuated on the finger tip.

If bleeding, inject the following, using a rubber syringe, and retain the lotion as long as possible.

Extract of witch hazel, two teaspoonfuls (7 c.c.), water two ounces (56 c.c.), for each injection.

EARACHE.

Discharge from the ear is oftenest due to sore throats from colds, also to scarlet fever, measles, and diphtheria.

Signs.—Either a very severe inflammation of the ear is set up with great suddenness, or mild attacks of pain which affect the ear

and shoot about the head. The pain is worse on eating. The severe attacks may end in convulsions, or brain fever, or an abscess in the ear which bursts, and causes a discharge which will persist for a very long time if neglected.

In a mild attack, a child will be peevish and fretful, and slightly feverish. It will knock its head about on the pillow, or constantly puts its hand to its ear or head. Pressure below the orifice of the ear will make it cry. A family tendency to consumption often exists in cases of discharge from the ear.

Treatment.—Apply hot fomentations, or a hot bran bag over the ear. Rub gently behind and below the ear with Elliman's. A leech applied just in front of the ear affords great relief. A gentle purgative should be given.

If there is discharge from the ear, syringe with a warm lotion twice a day. The best lotion is one of boracic acid, a teaspoonful (4 gram.) to a pint (600 c.c.). Syringe gently. If the discharge is unpleasant after syringing, make a hollow spill of paper, and blow into the ear a little boracic powder. Always give cod liver oil and extract of malt.

A residence at, or change to, the seaside is beneficial. Sea bathing is prohibited. Avoiding colds is a great preventative.

LEECHES.

How to apply. Wash the part with warm water and soap, then rinse well with warm water, and dry. Put the leech in an egg cup or small box, and turn it over on to the part it is to attack. Leave it inverted a few minutes. If it does not bite, apply a little milk or cream to the skin. When satisfied, the leech will drop off. If for any reason you wish it to cease, apply a little salt to its head.

If the bite, which is shaped like a triangle, continues to bleed, wash it with a little water, then soak a small piece of lint in Elliman's, and apply it to the wound with a little pressure. This usually stops the bleeding.

The use of leeches for blood-letting in conditions of local inflammation has been greatly neglected, and might be most beneficially reverted to.

MOUTH BREATHING.

is due in children to large tonsils, and overgrowth at the back of the nose and throat (adenoids), and only removal of these by

operation can effectually cure the condition. It leads to such serious results in after-life that this should always be done.

Signs.—Breathing through the open mouth, a vacant look and dull intellect.

Often slight deafness, discharge from one or both nostrils, snoring at night. Sleeping with mouth widely open. Persistent dreaming or disturbed sleep, pigeon chest, swelling of the glands at the angle of the jaw, speech as if the child had a cold in the nose.

Treatment.—Injections through the nose, painting the throat and attention to the general health. To syringe the nose, use a rubber syringe, and a lotion consisting of half-a-teaspoonful (2 gram.) of table salt to a pint (600 c.c.) of warm water. Or a mixture of equal parts of powdered borax and bicarbonate of soda, of which as much as will cover a sixpence is added to a pint of warm water. Use once or twice a day by means of a syringe or a "nasal boat."

Paint the throat with glycerine of tannic acid, or strong alum water.

In adults it is usually due to nose troubles, and syringing may be carried out in the same way, first with the above lotions, then with the glycerine of tannic acid, one teaspoonful (3.5 c.c.) to half-a-pint (300 c.c.) of warm water. Consult a surgeon.

DEAFNESS.

Deafness may be due simply to "wax in the ears," or may be the result of previous illness. Certain forms are quite incurable.

When due to simple causes such as wax in the ear, it is relieved by syringing. If due to colds in the throat, treat the latter (93). When the noises are persistent, consult a doctor. Noises in the head are often due to simple colds (page 91).

To remove wax.—Drop a little warm olive oil for two or three nights running into the ear, then syringe the ear with tepid water, dry, and put in a little cotton wool for 12 hours. Syringing must be done gently, and repeated if the deafness persists. It is often difficult to get the wax away. Nothing can prevent its re-accumulating, but a little vaseline oil may be dropped into the ear occasionally.

Note.—Never prick the ear with anything. Peas, buttons, pieces of pencil, flies, etc, must always be syringed out.

If a fly gets into the ear it sticks in the wax, and by its movements in trying to get away sets up the most intense tickling. Treatment is to pour in a little oil or weak glycerine and water, and drown it, then syringe it out.

If the deafness be not due to wax in the ear, then the following may be tried. Namely, to blow air into the chamber of the ear.

Thus, close the nose by holding it tightly with the fingers, then close the lips, so that no air can escape and blow hard as if blowing the nose. The air can be heard and felt entering the ears, or a bulging of the drum of the ears is experienced. This blowing must be done morning and evening, till such sensation is felt. A quinine and iron tonic should be taken. If there is any nose trouble, use the nasal douche (page 93.)

CONVULSIONS.

Convulsions in Children.—In the vast majority of cases, occur in rickety children. They begin between the 8th and 12th month, and are then brought on by numerous, and often very slight causes. If accompanied by fever, they often indicate the onset of some very serious illness, such as one of the acute infectious fevers, congestion or inflammation of the brain, lungs, or other parts, paralysis, acute ear disease, blood poisoning, etc.

Newly-born infants may have a few convulsions, and appear very drowsy, but this is of no importance.

Also when the infant is two to four months old, and artificially fed, fits may occur, probably from indigestion and colic due to its inability to assimilate cow's milk. The best remedy for this is to employ a suitable wet nurse.

The Causes which in a rickety child result in convulsions are especially teething, excitement during play, worms, indigestion, over-full stomach, diarrhoea, any cause of debility, severe coughing (whooping cough), and others.

Signs.—An attack may occur quite suddenly, or it may be preceded by a cry, or restlessness, grinding of the teeth, twitching of hands and feet. Then the eyes are turned up or stare hard, the face becomes pale, the child catches its breath, stiffens the body,

then becomes convulsed, working and throwing its arms and legs about, the eyes roll, the face is distorted, and the head thrown back.

Gradually this subsides, and the child sleeps. Or one attack may pass into another, with great rapidity and last 24 hours, or the child continues unconscious and dies.

After an attack of convulsions the child may awake paralysed on one side, or in one limb.

Treatment.—During the intervals between the fits, suitable diet, fresh air. Attend to the teeth and look for worms, or other causes.

When an attack is impending, as may be seen by the twitching, etc., give an emetic of ipecacuanha wine, especially if the child's stomach is loaded. Or an aperient, castor oil, one to two teaspoonfuls (3·5 to 7 c.c.), or calomel one grain (6·5 Cgm.), is best if the bowels are loaded.

It is always wise to give an aperient after the emetic has acted. At the same time give a warm bath excluding the head.

During an attack a warm bath up to the neck with or without cold to the head, should be at once given. A little mustard may be put in the water, which should be about 100° to 110° F., *i.e.*, tolerable to the elbow.

The convulsions soon cease, then wrap the child in a blanket and put it to bed. As soon as possible give a purge if one has not been given before the attack.

Children's convulsions may develop into epilepsy.

EPILEPSY.

Epilepsy in Children is more difficult to recognise than in adults, and when observed, at once consult a physician. Sometimes an attack with fits (*i.e.*, convulsions) as in adults occur (page 227). But there may be only a momentary loss of consciousness as if the child were faint. It suddenly becomes pale, nods its head, as if falling asleep, and drops anything it may be holding in its hands, and then recovers itself.

Attacks are very prone to occur at night. The child may be convulsed, or have merely a little quivering, or it may awaken, looking dazed and strange, with its eyes staring, and occasionally it laughs and talks in an unusual, silly way. (*Continued* page 227.)

ADVERTISEMENT.

SPRAINS
IN
GENERAL.



See the ELLMAN
E.F.A. Book, Treat-
ment of Animals,
page 253.

Treatment should always be under the physician's direction, else insanity, etc., may develop. Much can be done to prevent or modify the disease by looking after the general health, and especially those causes leading to convulsions.

Education must be judiciously directed, otherwise the disease may be become incurable.

Do not give way to the child in all things, and so lose moral control of it. All mental exhaustion and excitement should be interdicted. Judicious exercise, fresh air, bright companionship should be secured.

Bromide of potassium and sodium are the drugs to use, but they must be used only by the doctor's orders.

Epilepsy in Adults.—A form of epilepsy without convulsions may occur, the attacks are quite momentary, thus when at table, eating, the sufferer may suddenly stop eating or talking, drop his knife and fork, stare fixedly before him and become pale.

He soon recovers and often continues his conversation as if nothing had occurred.

Again a little incoherency in conversation or sudden forgetfulness may be the only sign. These attacks usually develop into the epileptic fits or convulsions.

The Convulsive Attack is usually preceded by a peculiar sensation somewhere or other, or by a spasmodic movement. Then the fit occurs, during the whole duration of which the patient is unconscious. It has three stages :—

First Stage. With a shrill cry the patient suddenly falls, with head thrown back, hands clenched, arms bent at the elbows, legs thrown out straight. The face becomes blue, respiration ceases, he is absolutely rigid.

Second Stage. The patient becomes convulsive, every muscle twitches and works.

He violently bends and straightens his arms, kicks his legs and knocks his head about, champs his mouth, and in consequence nearly always foams at the mouth, his whole body writhes and twists.

He is liable to injure himself, bite his tongue, and injure his

hands and head. He may unconsciously evacuate his bowels and bladder.

Third Stage. The patient gradually relaxes, convulsions cease, breathing becomes snoring, and if left alone he will usually sleep deeply for some hours and waken with a little headache.

Note.—At times, after an attack he is in a trance-like state, and may do strange or even violent actions without knowledge or responsibility. So watch the patient.

Treatment.—See to the general health and diet. Do not take patient away from employment if such be not dangerous to him, or if “independent” give him some healthy safe employment or see he takes judicious outdoor exercise or has an outdoor hobby.

In some cases animal food seems positively injurious, to such give a vegetable diet. Meat should only be given once daily in any case and especially should overloading the stomach be avoided. Feed regularly with a light diet. If the attacks appear at night a very light meal should be taken 3 hours before retiring, nothing later. Exercise constant supervision over the patient.

During Attack prevent injury. See when falling that he does not injure himself, if possible. Put a piece of cork with a string tied tightly about it, between his teeth, or stuff in a piece of clothing, a handkerchief, or a piece of soft wood or rubber, anything that will prevent his tongue being bitten, yet will not injure his teeth.

Restrain all other violent movements, but do not attempt to stop them completely.

Allow the natural desire for sleep to be indulged in after an attack. Bromide of potash must be taken continuously for two years under medical supervision. *Take very little salt or salt dishes.*

ERYSIPELAS

Is a form of infectious disease. Alcohol, Bright's disease, debility, previous attacks, wounds and operations, render attacks more probable. It may occur without an obvious wound, especially about the head.

Signs and Symptoms.—Sudden rigor, chill, or convulsions.

The wound area begins to look red and angry, and the wound or scratch itself becomes foul and painful.

When it begins without a wound on the face, a red blush appears on the bridge of the nose and spreads to the cheeks. Swelling of the red area first occurs, soon considerable swelling under the eyes and about the face and head develops. The features may become indistinguishable. The skin is smooth, and feels tense and hot, and pits slightly on pressure. Blebs may appear. The patient complains of a bursting tingling feeling. The red edge can be felt raised above the unaffected surface. The glands in the neck are swollen. Fever is high and in bad cases the patient becomes delirious.

Treatment.—Isolate the case. Give light and nutritious diet. Reduce the temperature. Treat as for fever (page 171). Give stimulants to old people.

The Inflamed Part should be dusted thickly with flour or starch, or one of the dusting powders (*see* page 170), or foment with hot lead lotion (page 231) containing one teaspoonful (3·5 c.c.) of laudanum to the pint (600 c.c.), or cover with lint, soaked in the lotion and repeatedly renewed, or merely cover the part with cotton wool and *so exclude the air*.

The essential thing is to keep the patient alive by proper feeding and the disease will more often than not cure itself.

HERPES, SHINGLES

Often affects the sides of the chest, the forehead, or the hips, also other places after an attack of “neuralgia.” Following such an attack, numerous little blisters appear, and in a few days burst, or dry up, forming a scab which falls off and leaves behind little white scars. These are often exquisitely painful.

Treatment of Shingles.—Dust the area thoroughly with dusting powder (page 170), cover thickly with dry cotton wool, and lightly bandage. This excludes air, and protects the blisters till they shrivel up.

Zinc ointment put thickly on a piece of linen and covered with cotton wool will also suffice. The pain may be very severe in adults, and then needs Antipyrin, five grains (·3 gram.) every four hours, or Laudanum, five to ten drops (·3 to ·6 c.c.) in water every

six hours. Give a little magnesia or castor oil. When well, change of air and Cod Liver Oil. Children are most often affected.

ECZEMA

Is an inflammation of the skin, and is due to innumerable causes and assumes numerous forms.

Causes.—Acting through the blood and intestines are : Gout, rheumatism, heredity, certain drugs, dietetic errors, diabetes and Bright's disease.

Direct causes are any form of friction and irritation. The sun's heat especially when reflected from water, any form of body insect, coarse and strong soaps, the infrequent changing of napkins in children, chemicals, the presence of varicose veins. It is prone to affect hairy parts of the body. In folds of skin in fat people or babies, beneath the breasts, in the groin and bend of elbow. Lastly, but not least, scurf or dandruff (page 217). Whatever the cause eczema may be acute or chronic.

Signs and Symptoms.—If acute, the part smarts, itches, and shows the signs of inflammation (redness, etc., page 38). It becomes covered with minute blebs of serum, which break and weep, the fluid which comes away is sticky and stiffens linen, which sweat does not. This collects and forms little crusts.

At other times, instead of little blebs which burst, the part becomes red, hot, etc., and small red points form, like "goose skin," but red. If the part is allowed to become dirty, pus and septic matter may form, and a foul mass or pustules, *i.e.*, small abscesses, result.

In the chronic forms it assumes many varieties, but nearly all have minute scales like bran, and are slightly red, and itch.

Treatment.—Avoid the use of soap other than good medicated soaps, bathe the part with bran or oatmeal water. Use soft water and dry carefully. In acute or weeping eczema infrequent washing is desirable, in the chronic dry cases such restriction is unnecessary, and the free use of good soap and soft water for cleansing purposes is desirable. In dry chronic cases a course of sulphur baths at Harrogate sometimes does good. A warm climate is suitable for the skin of patients who suffer from chronic eczema.

Avoid indigestible food, spices, condiments, salted meat, and often oatmeal and coffee. Alcohol is usually injurious.

Acute eczema is best treated by sedative lotions or powders; ointments should be avoided in those cases in which weeping occurs. The lotions are best applied on butter muslin, constantly kept moist. The best are—

- | | | | | | |
|----|---------------------------|---|---|---|------------------------------------|
| 1. | Glycerine of lead acetate | - | - | - | 1 ounce (28 c.c.) |
| | Water or Milk to | - | - | - | 1 pint (600 c.c.) |
| 2. | Or Zinc Oxide | - | - | - | 2 teaspoonfuls (8 gram.) |
| | Glycerine | - | - | - | 1 ounce (28 c.c.) |
| 3. | Or Carbolic Acid | - | - | - | $\frac{1}{2}$ teaspoonful (2 c.c.) |
| | Water | - | - | - | 1 pint (600 c.c.) |

well shaken up, rapidly applied and frequently renewed.

If not weeping, use a weak ointment, applied on linen, washing daily with boracic lotion, to remove the old ointment.

- | | | | | | | |
|----|------------------------------------|---|---|---|--------|------------------------------|
| 1. | Zinc Ointment | - | - | - | - | { of each
equal parts, or |
| | Lead | - | - | - | - | |
| 2. | Dilute Nitrate of Mercury Ointment | - | - | - | 1 part | 3 parts |
| | Vaseline | - | - | - | - | |

In Chronic Cases.—Stimulate by means of Creolin, Liquor Carbonis Detergens, and alkaline lotions, consisting of borax or bicarbonate of soda, one teaspoonful to a pint of water, or half a breakfast cup to a slipper bath, or use stronger ointments containing mercury, carbolic, and tarry constituents. Treat the gout, varicose veins, and other causes. When affecting the legs, massage, and the wearing of elastic stockings or rubber bandages will often help to cure chronic eczema where other treatment has failed (*see* Varicose Veins, page 103).

A STYE

Is a form of boil on the free edge of the eyelid. A red painful spot appears, and a burning feeling is felt. Then a yellow point develops, through which an eyelash protrudes.

Treatment.—Pull out the eyelash (or lashes) and very gently squeeze the contents out, do not squeeze hard. Then bathe the eye frequently with a warm lotion of Boracic Acid, one teaspoonful (4 gram.) to a pint (600 c.c.) of water. At night rub a little vaseline along the margin of the eyelid.

It is so very commonly associated with chronic constipation and general ill-health that these must be treated at the same time. Cod Liver Oil should be given to children who suffer from eye troubles.

BLACK EYE,

Due to blows and squeezes, is best treated by *immediate* application of cold Lead Lotion (*see* page 216) and firm bandaging where possible (or pressure applied by the hand). After a few hours of such cold application, immediately begin to massage gently; employ rubbing and gentle friction, which will remove the evidence of bruising sooner than any other treatment.

The application of cold raw beef reduces the inflammation.

Use of Elliman's in cases of Raw Surfaces and Broken Skin occasioned by Bruises and Cuts.

Warning.—Under the above circumstances, Elliman's must not be used pure, but diluted with water—2 to 10 or more parts of water to 1 of Embrocation, according to the condition of the wound.

Also in cases of very tender skin, mild treatment generally is desirable. (*See* page 24, last par.)

Cuts.—In cleansing the wound the removal of dirt is most important.

Use plain boiled water or tap water containing a tablespoonful of Elliman's to the pint, and thoroughly wash the wound with clean pieces of linen soaked in the lotion; use plenty of it.

Pick out visible pieces of dirt, etc. Then to dress the wound, soak a clean piece of linen in a mixture of two parts of Elliman's to ten or more of water, put it on the wound, cover with a piece of linen or oiled silk, and lightly bandage it in place. Dress the wound daily. If the wound smarts and appears red discontinue the use of Elliman's for 24 hours, or more, and apply olive oil on lint in the place of it.

Bruises when the Skin is not broken.

Such bruises may be treated by simply rubbing the part bruised with the "Elliman's."

FIRST AID IN POISONING CASES.

In case of poisoning, a medical man should immediately be sent for.

The following is a list of substances recommended for domestic use in cases of emergency, by A. W. Blythe, M.R.C.S., in his well-known work on poisons :—

1. *The Multiple Antidote.*

Saturated soln. Sulphate of Iron	-	-	100 parts.
Water	-	-	800 "
Magnesia	-	-	88 "
Animal charcoal (kept in the dry state)			44 "
Mixed.			

Given in wine-glass doses in poisoning by arsenic, zinc, opium, digitalis (foxglove), mercury, or strychnine. Useless in poisoning by phosphorus, antimony, or caustic alkali.

2. *Calcined Magnesia*, for use in poisoning by acids.
3. *French Turpentine*, for phosphorus poisoning.
4. *Powdered Ipecacuanha* as an emetic, dose 30 grains (2 gram.) or *Zinc Sulphate*, dose 25 to 30 grains (1·5 to 2 gram.).
5. Two or three tablespoonfuls of *Mustard* in warm water (as emetic).

General Directions.—First administer an emetic, followed by the *Multiple antidote*; this is not poisonous.

For phosphorus, give *Oil of Turpentine*: half drachm (1·5 to 2 c.c.) doses every half hour.

For acids, give *Calcined Magnesia*.

For alkalies, give *Vinegar*.

Preserve the vomit, etc., if intentional poisoning be suspected.

TABLE OF POISONS AND ANTIDOTES.

The following list, being designed for household use, is made as compact as possible.

In all cases of poisoning, it is of the first importance to induce free vomiting, either by the administration of emetics or by mechanical irritation of the fauces, etc. The drinking of water or milk (except in phosphorus) is also advisable. If the patient

cannot swallow, nothing must be given by the mouth, in consequence of the serious risk of it finding its way into the breathing passages.

Purgatives are of use only when the poison is a very insoluble body. In poisoning by the inhalation of gases, fresh air is the principal thing, and the performance of artificial respiration (*see* page 144).

POISONS.

Morphine and Opium.

If recently taken, give 2 or 3 grains (15 to 20 Cgm.) of Permanganate of Potash (a very small pinch) well diluted with water. Emetics, application of cold water to the body, purgatives.

Arouse the patient and keep conscious by all possible means. Strong black coffee may be administered. In advanced stages, stimulants.

Carbolic Acid.

Treatment.—Encourage vomiting till no smell of carbolic acid can be detected. Give white of egg, unboiled ; whisky, also Glauber's salts. Apply Elliman's on hot flannels to the abdomen to allay the pain.

Lead Salts.

Epsom salts, Glauber salts, Milk, Emetics, Purgatives.

Oxalic (and Oxalate of Potash, Salt of Sorrel, etc.)

Has corrosive as well as vital action. Burning in the throat and stomach, vomiting, particularly of bloody matter, imperceptible pulse and excessive languor. $\frac{1}{2}$ oz. (15 c.c.) will act as fatal dose, death occurring very rapidly. Antidote: Whiting, chalk, with bland oils, etc.; *avoid potash and soda*, the oxalates being equally poisonous.

POISONS.

Prussic Acid.
Cyanide of
Potassium.
Essential Oil of
Bitter Almonds.

Strychnine.

Acids { **Hydro-**
chloric
Phosphoric
Sulphuric
Nitric, etc.

Chloroform and
Chloral.

Phosphorus.

Alkalies :—
Potash and Soda.

ANTIDOTES.

Treatment.—Stimulants, emetic, *dash cold water in the face and down the spine* ; apply *strong ammonia to the nostrils*, hot water bottles to the feet and chest ; *artificial respiration* ; very smart treatment being required, as the patient will be either dead or better in a few minutes, according to the dose taken. Peroxide of Hydrogen well diluted with water, also sal volatile one or two teaspoonfuls (3·5 to 7 c.c.) in water by the mouth.

Emetics and warmth.

Tannin (no coffee or citric acid).

Treatment (applicable to all corrosive acids) : Whiting or chalk suspended in milk ; lime water ; oxide of magnesia, ground to a thin paste, with water ; soap water ; washing soda, or other alkaline substances in water ; white of egg, un-boiled ; olive oil, etc. *Never give emetics*, they only cause further corrosion.

Fresh air. Cold affusion of the head. Effervescing drinks.

Emetics ; Sanitas $\frac{1}{2}$ to one teaspoonful (2 to 3·5 c.c.) well diluted with water. Oil of turpentine ; oxide of magnesia. Dilute permanganate of potash or of hydrogen peroxide. *No milk, oil or alcohol*, in consequence of the solubility of phosphorus in these liquids.

(Such as pearl ash, washing soda, etc.) Administer an acid—vinegar most convenient in teaspoonful doses ; citric or tartaric acid ; bland oils, as salad or sweet oil.

POISONS.

Ammonia.**Alcohol.****Arsenic (Arsenious Acid).****Belladonna and Atropine.****Aconite.****Monkshood.****Wolf's Bane.****Mercury. Corrosive Sublimate. Red and White Precipitates.****Petroleum.****Naphtha.****Paraffin.****Nitrate of Silver.****Caustic Point.**

ANTIDOTES.

(Choking sensations produced in addition to other symptoms.) Treat as for potash and soda.

In over-doses, symptoms well marked and well known.

Treatment.—Emetic, cold douche, *followed by warmth*, hot bottles, etc. Loosen all tight clothing.

Emetic. Give the precipitate formed by mixing together sal volatile and tincture of steel; mucilaginous drinks; cold affusion.

Encourage vomiting; give stimulants—brandy, with cayenne pepper.

Emetics. Stimulants, internal and external. Artificial respiration. Warmth. Apply Elliman's on hot flannel to the abdomen.

Emetic. White of egg, unboiled, mixed with water. Flour and water. Stimulants.

The odour may be detected in the breath. Encourage vomiting; bland fluids, as barley water or arrowroot.

Salt and water.

MALARIA—SANITARY INSTRUCTIONS.

For the Use and Observance of Agents of Firms, Companies, or Business Houses in Malarial Places.

A. How Malarial Fever is contracted.—It should be realised once for all that malarial fever is contracted only from the bite of a mosquito (the *Anopheles* variety) that carries fever germs in its poison secretion, and that the *Anopheles* mosquito

can get these germs only by previously biting persons (Europeans or natives suffering from fever, or young native children apparently quite healthy) carrying the malarial germs in their blood.

B. How Blackwater Fever is contracted.—Blackwater fever is also malarial in its origin, and occurs only in those who have suffered periodically from malarial fever. This is a most important reason, therefore, for doing all in your power to protect yourself from ordinary, even the mildest, attacks of malarial fever.

C. Complete Protection is possible.—By following out the methods of protection given below.

Mosquito Nets.—The senior should satisfy himself that all the European employes of the firm invariably sleep within mosquito curtains of a mesh of not less than ten holes to the inch, and kept free from rents. Rents are most easily mended by twisting up the net at the point of breakage and tying round with a piece of string. The net should, when in use, be hung inside the poles and tucked in under the mattress. When not in use, the free sides of the net should be drawn together, twisted somewhat, and thrown across the top of the net. The net should not have a slit or join in the side. A mosquito is never found inside a properly-used net. It is wise to tack on a piece of material all around the net, above the level of the mattress, so as to protect the limbs from bites through the net during sleep. Mosquito boots to protect the ankles in the evenings may also be recommended.

Quinine.—All the European employes of the firm should take at least 15 grains (1 gram.) of quinine per week, and should report in writing to the senior that they are doing so.

Mosquito-Proof Room.—The senior should see that the quarters provided by the firm for their European employes possess at least one sitting-room, or portion of a verandah securely protected by screens of wire gauze against the entry of mosquitoes. The room or portion of verandah selected for protection should be that which is commonly used by the inmates from sunset to bedtime.

Punkahs.—The senior should see that the office of the firm and the common dining-room of the European employés are provided with punkahs or electric fans, to be used during office hours and during meals respectively.

Details.—The senior should see—

1. That the premises of the firm are provided with at least one rubbish bin (with a cover).
2. That all cisterns, tanks, tubs, and other vessels required for the permanent storage of water are furnished with accurately fitting covers, and also with wire gauze caps to the pipes, for the purpose of excluding mosquitoes.
3. That all useless pits, pools, tanks, disused wells, and other unnecessary collections of water within the premises of the firm are filled up or drained away.
4. That all open and permanent collections of water really required for irrigation, washing, or other purposes, are treated once a week with kerosene oil for the destruction of larvæ.
5. That the surface and rain water drainage of the premises is good, and that the drains and roof-pipes are in proper repair.
6. That the latrines are in good condition and well kept.
7. That the drinking water is obtained and stored in a cleanly manner.
8. One of the servant boys might be employed searching for and destroying mosquitoes in the house, and should receive special instruction in the same, which will be arranged, if necessary, by the sanitary authority.

Weekly Inspection.—Once a week the senior should make a detailed sanitary survey of all the premises of the firm, including offices, factories, dwelling houses, sleeping rooms, cook rooms, servants' quarters, lavatories, and latrines, and also all gardens, yards, and stables, and should see that the instructions given above are being punctiliously attended to, especially :—

1. That employés use mosquito nets.
2. That all rubbish, broken bottles, old tins and pots, etc., are kept in the rubbish bin.
3. That no stagnant water is allowed anywhere within the premises unless in vessels adequately protected with wire gauze or in cisterns or wells which are treated weekly with oil.
4. That every part of the premises is in an absolutely clean condition.
5. It is suggested that it would be useful that a record of all cases of fever occurring among the employés should be carefully kept.

Natives.—The senior should endeavour to apply these rules as much to native employés as to Europeans.

General.—If the premises of the firm are surrounded by areas which the senior considers to be insanitary; if dirty streets, houses, yards, and waste grounds, or rank and useless vegetation, or useless collections of stagnant water, are allowed to exist in the vicinity of the premises of the firm, the senior should report the matter once a month to the local sanitary or medical authority until the evil is remedied, and should send a copy of his report to the head of the firm at home.

If further instructions are required regarding the carrying out of any of the orders and suggestions given above, application should be made either to the local sanitary or medical authority or to the medical practitioner entrusted with the care of the employés of the firm, or, failing these, to headquarters at home.

PNEUMONIA OR INFLAMMATION OF THE LUNGS

May occur in adults or children. In the latter it often develops upon some preceding affection of the throat or lungs. It appears most frequently between the ages of 1 to 5 years, or 25 to 50 years, and especially in males. Predisposing causes consist in defective nourishment, overwork, exposure to cold or sudden extremes of temperature. Occasionally it appears in epidemics, and one attack seems to predispose to recurrence. The lower lobe of the right lung is most often involved.

Catching Cold (page 89) or exposure while under the influence of alcohol are the commonest causes inducing an attack.

The Incubation is very short, and the suddenness of the onset is marked. Occasionally the disease is preceded by a feeling of malaise, with backache or chilliness ; usually the onset is with a single rigor (page 193), followed in the course of 12 or 24 hours by symptoms referable to the chest. In children, convulsions or vomiting may occur.

The succeeding symptoms are :

Pain in the side of a stabbing character, made worse by breathing, hence to minimise the pain the

Breathing is frequent, 30 to 40 per minute, but short and shallow, the patient winces or utters an exclamation with every breath. Duskiness or flushing of the face may be present.

The Expression evinces intense anxiety and is alert.

Cough, a short, slight, irritating, constant but unrelieving cough which increases the pain. Often expectoration of blood, either profuse, or merely causing a streaky " rusty " appearance in the sputum, which may be stained at times and tenacious like prune juice.

Herpes, *i.e.*, an eruption of blisters about the lips, may be present.

Fever (page 171) the temperature may reach 104° F., the skin be hot and dry, thirst severe, mouth parched, eyes bright ; occasionally great excitement or delirium, becoming replaced by severe prostration.

Treatment.—The disease being short but acute and exhausting, the primary object is to thoroughly sustain the patient with nourishment and, if necessary, stimulants.

Immediately put the patient to bed in a suitable room (page 166). Relieve the pain in the side by applying fomentations (page 87) sprinkled with Elliman's, or blister mildly with the Embrocation (page 86). The application of an ice-bag (page 43) to the lower part of the chest is often beneficial, and may be continued throughout the disease, a piece of flannel intervening

between the skin and the ice-bag. Give a small dose of castor oil on the first day, not later. Husband the strength; allay excitement—this, with sleeplessness and fever, may be reduced by tepid sponging (page 168). Give abundance of liquid nourishment (Nourishing, etc., 161 and 166) and stimulants in small quantities, commencing early in the disease: for an adult, brandy or whiskey, one to three teaspoonfuls (3 to 10 c.c.) every two or three hours; for a child, 10 to 15 drops similarly. Oxygen inhalation for half to one hour three or four times a day, and prolonged if duskiness or signs of failure appear. If a child is unable to expectorate and is being suffocated by the phlegm, give an emetic of $\frac{1}{2}$ oz. (14 c.c.) of Ipecacuanha Wine, followed by warm water, and thoroughly rub the chest with the Embrocation.

Note.—The disease ends by a crisis (173) usually with profuse sweating on the fourth to tenth day; continue treatment after this. Never purge after the first day. Good nursing, plenty of nourishment, judicious stimulation, with local applications to the chest are indicated.

Mixture to be given an adult:

Tinct. Nucis Vomicae	-	-	-	-	5 drops
Tinct. Cinchon Co.	-	-	-	-	one teaspoonful (3.5 c.c.)
Spr. Chloroformi	-	-	-	-	10 drops
Carbonate of Ammonium	-	-	-	-	3 grains (2 gram.)
Water	-	-	-	-	add to 1 ounce (28 c.c.)

To be given every four hours.

For a child of four years:

Tinct. Nucis Vomicae	-	-	-	-	-	1 drop
Tinct. Belladonna	-	-	-	-	-	2 drops
Spr. Ammon. Arom.	-	-	-	-	-	3 drops
Glycerini	-	-	-	-	-	10 drops
Water	-	-	-	-	-	add 1 teaspoonful (3.5 c.c.)

To be given every four hours.

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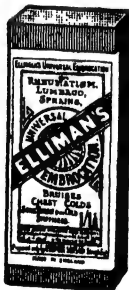
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